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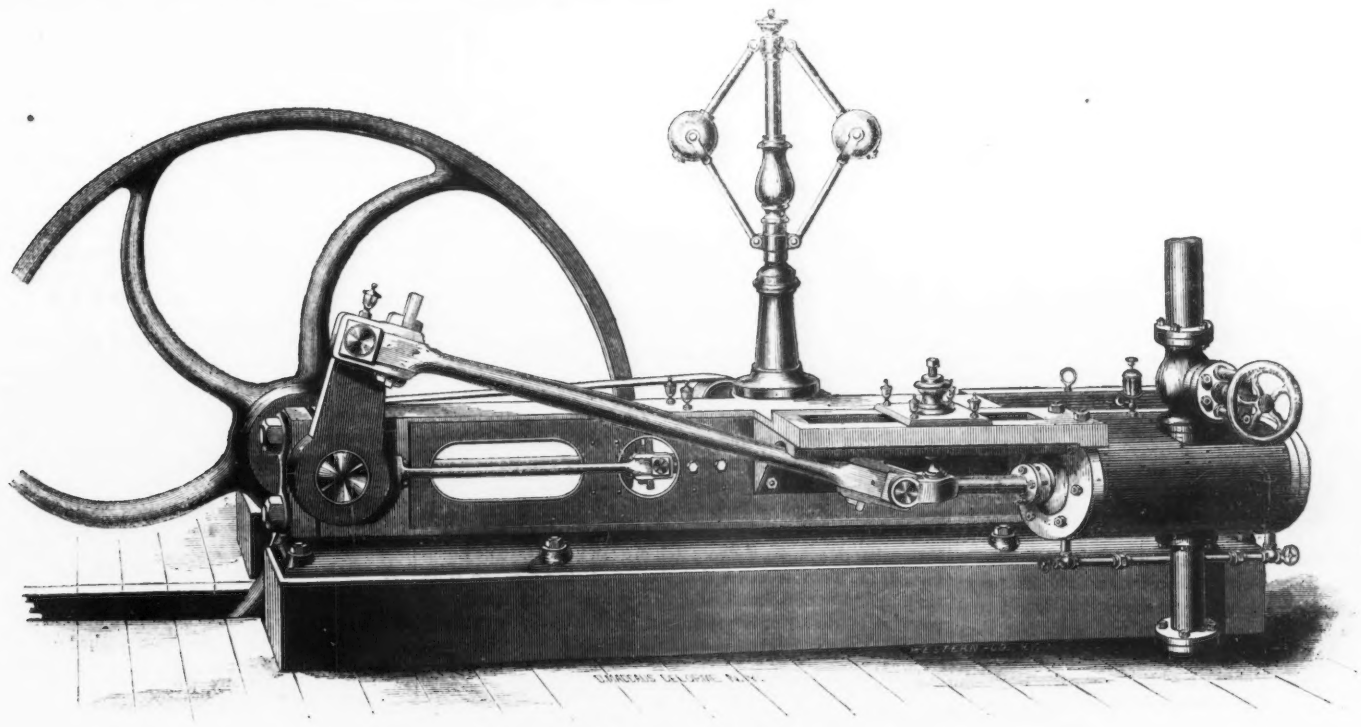
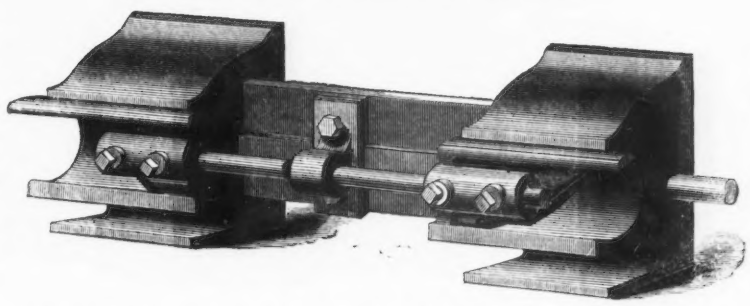
The Rider Steam Engine.

The late exhibition of the American Institute contained a feature, only paralleled at the World's fairs of London and Paris, namely, the exhibition of a number of large, stationary, horizontal steam engines of the best workmanship and acting on the most improved principles. Among them the Rider Engine stood foremost, in the judgment of our most competent engineers. It embodies several improvements, all tending to simplify, and at the same time to perfect its mechanism, and increase the smoothness of its action. The important feature of having the different parts in line has been obtained by casting the main frame steam-chest and pillar-block in one single piece, and so disposing the material that the heaviest parts are coincident with the strains. There is then no spring nor vibration during the working, while at the same time this construction presents a finished appearance. The main feature of the Rider Engine, however, is the construction of the cut-off valve, and the manner in which its operation is regulated by the governor. We have before on several occasions, in this Journal, spoken of the advantages of working steam expansively by means of cut-off valves. It is unnecessary at present to enter into any further discussion on this subject. We purpose merely to explain how the cut-off valves are arranged in the Rider Engine, and the manner in which they are regulated.



THE RIDER HORIZONTAL ENGINE.



THE RIDER CUT-OFF VALVE—AS ADAPTED TO THE HORIZONTAL ENGINE.

This valve is a sector of a cylinder, as represented in the figure, with the ends cut off in opposite directions, so that the surface has the shape of a triangle bent around nearly half a cylinder. It is fitted into a semi-cylindrical recess in the back of the main slide valve, and between two spiral slits which admit the steam; it is operated alternately forward and backward by means of a separate eccentric, and thus opens and shuts the ports in the usual manner. At the same time it is clear from the figure that if to the valve-stem an axial motion is given, the valve will so rotate on the concave cylindrical surface of the recess, that the parts will be more or less opened at every stroke, and sooner or later closed. This rotary motion is communicated to the valve-stem by means of the governor.

When the engine is running slowly, the port is opened for a long time, but as soon as a greater velocity is obtained, the rising balls of the governor cause the valve-stem to rotate in such a manner as to cause the valve to cover more of the ports, thus admitting less steam, or, rather, cutting it off earlier. This effect is obtained by making a portion of the valve-stem square, and fitting to it a sector, engaging a rack on the lower part of the governor-spindle. The cut-off valve is thus moved lengthwise by the eccentric, and at the same time rotated by the governor, as soon as the velocity of the engine changes.

The advantage of this arrangement is its simplicity, reliability, strength, compactness, and freedom from the liabilities of derangement so common to many forms of intermittent motion.

Another important advantage is, that by the facility of its construction, and absence of such complex appendages as springs, levers, catches, dash-pots, etc., this cut-off arrangement may be made with the utmost perfection of workmanship, without increasing the cost as much as is the case with other devices for the same purpose. Moreover, it is applicable to engines of any size, from one-horse power, or even less, to a hundred or more, and to vertical as well as horizontal engines.

Rider engines are manufactured at the Delamater Iron Works, foot of Thirteenth street, N. R., New York; by Handlen & Ripley, Nos. 16 and 18 Albany street, New York; by Campbell, Whittier & Co., of Boston; by Sault & Co., of New Haven; and by the Wood & Mann Steam Engine Company of Utica, N.Y.

Mica and its Uses in the Arts.

Of this mineral the General Land Office has received specimens from new localities in New Mexico and Arizona. Experiments have been made lately for the purpose of transforming mica into brocades or bronze colors, whereby a new field is opened to the utilization of this mineral. To this end the mica is well crushed, ground, boiled in muriatic acid, washed and separated according to the size of the scales thus obtained. The obtained laminæ exhibits a beautiful glass-like lustre, of silver-white appearance, and are denominated in commerce, brocades, crystal colors, or mica bronze. The four kinds of silver-white or color brocades which are met with in commerce are assorted according to the size of the laminæ. They possess the following advantages over the ordinary fabricates: First, they do not contain any ingredients injurious to health; second, they possess the metallic lustre of the metal brocades, and even surpass them in brilliancy of color; third, brown, black, blue, green and rose are represented in a rare lustre, which is not the case with the metallic brocades; fourth, they deport themselves perfectly indifferenly towards sulphurous exhalations; they retain their lustre in moist air; have a small specific weight, and possess more body. These manufactures might be well applied to metal, bristol board, wood and glass; consequently they may be adopted for the manufacture of this or other fancy articles, for coloring artificial flowers, wall paper, sealing wax—in short, in all textiles where colors are employed. In applying them it is to be recommended to cover the articles with a paint similar in color to those of the brocades. For silver, for instance, white lead for blue, ultramarine, etc.

In using blue colors, the paint is ground with a mixture of four parts of glue and one of glycerine; upon this field, when hard, the brocade is spread. The most suitable binding material for the last mentioned is a paste composed of four parts of starch and one of glycerine. In using oil paints as ground color, a good dammar or pale copal varnish is more suitable than the paste described. When finally coated with a proper spirit or turpentine varnish, these articles take a lustre for surpassing in splendor and durability those ordinarily obtained. Articles coated with asphalt varnish, and afterwards spread over with silver brocade, have a granite-like appearance. If employed in the preparation of colored isinglass, magnificent crystalization is obtained, well suited for inlaying in buttons and other articles; furthermore, they are excellent in imitating gold, rain, snow in theatres, on account of their small specific weight and cheap price. Finished porcelain and glassware might be coated with the above brocades if brought again to the heat of their melting point.

Mica was first used as a substitute for glass in windows, on account of its durability when exposed to high temperatures it came to be extensively used for doors of stoves, and for this purpose it was largely imported up to the year 1855, when the beds in this country were first taken advantage of. Mica is also made into reflectors, sea-compasses, in layings for wood, instead of enamel, and many other articles. But one of its most important uses is as a substitute for glass in spectacles which are intended to protect the eyes of fire and metal workers against sparks and fragments of metal and rocks. With regard to the occurrence of mica in this country, it is found in Acworth, Grafton and Alstead, in New Hampshire, in perfectly transparent plates, sometimes exceeding a yard in diameter.

In St. Lawrence county, N. Y., eight miles from Potsdam, in plates seven inches across; and near Warwick, in a field of feldspar, in plates sometimes a foot in diameter, and in a multitude of places in New Mexico and Arizona, from which localities specimens are on exhibition in the cabinet of the General Land Office.

Central City to Georgetown, Colorado.

TO THE EDITOR—SIR: Leaving Central in the 8:30 A. M. stage, we ride slowly up Russell Gulch for some two and a half miles, catching a glimpse of the distant plains from the head of the gulch if the day is clear. Crossing over into Virginia cañon we have a long descent to the valley of the South Clear Creek, and to Idaho, famous for its warm alkaline springs and, I was told, for its scenery. A bath in the warm waters is delightful and refreshing, and I give due credit to the springs; as to the scenery—well, I was not overpowered by it. From Idaho we have a good road with a gentle rise. The hills, as we ride on, lose the rounded form they have about Central and assume a more rugged and precipitous character; the rocks, scarred and broken, standing out boldly on either side of the way. We pass several diminutive cities (in Colorado there are no towns or villages) of which Fall River, at the junction of a stream of that name and of South Clear Creek, is noted for its good hotel—a fact worthy of mention, after having felt the want of such an institution at Central. Keeping alongside of the creek, and all the way in fine scenery, we finally reach Georgetown.

This city is very prettily situated in the valley of the South Clear, at the junction of the two forks of the stream. On three sides rise steep hills; on the right (looking up stream) Republican Mountain, on the left Griffith Mountain, and in front, between the two branches of the creek, Leavenworth. It is on these and other mountains, often a thousand feet and more above the city, that the silver mines are located. Around Idaho we saw the traces of gold mining, and several places were pointed out where various amounts of the precious metal had been extracted. Several mills—not working, but evidently erected at a very considerable expense—are scattered along the road; but Idaho can hardly be called a mining centre as yet. Here in Georgetown, however, we are among the silver mines, some quite extensively worked, but most of them hardly developed, and waiting for lower prices of labor and for improved methods of dressing the ores.

Just below Georgetown, on Griffith Mountain, my attention was called to the Summit, Magnet and Comet lodes, but the fact of their being situated so high up the steep mountain sides in this country, where mountain-climbing tells fearfully on the unacclimated stranger, and also there not being much if any work done on them, prevented my paying them a visit. Just opposite the city, on the same range, is the Griffith lode, owned by the Wilson & Cass Co.; here a large shaft has been sunk about 200 feet, and two drifts run in about 100 feet. The vein shows quite fairly, being sometimes about two feet wide, but the ore as yet has hardly been tested, although apparently quite promising. A wire ropeway is to be constructed to transport the ore to the road below, and the company is waiting for the completion of their dressing-works, which will be spoken of hereafter. On the hills opposite Griffith Mountain are several lodes, on which, however, work has been suspended for the present for various reasons. The New Boston has a shaft some 180 feet deep, and a tunnel about 250 feet long; about 75 feet down the shaft there is exposed a smooth and polished surface some fifteen feet wide and many feet long where a slide of the rock has occurred.

Some two miles up the right fork of the creek, Mr. Burleigh is driving a tunnel to pierce the lodes at a low level. He is using his drilling machines (the same as those employed in the Hoosac tunnel) and is confident of meeting with success. One of his greatest obstacles at present is the want of experience on the part of the workmen. Several other tunnels are being driven in the neighborhood of Georgetown. About a mile beyond the Burleigh tunnel we find the Brown and Terrible lodes, and others of lesser note. The Terrible is one of the most important mines in this part of the country. The general direction of the vein is N. 61½° E., with a dip (which commences some distance below the surface) to the south. The shaft runs down 185 feet, but is filled with water for a hundred feet. There are three levels: the first is 56 feet down, runs east 150 feet and west about 130; the second is 75 feet deeper, runs 180 and 90 feet: and the third, 60 feet deeper still, runs 55 and 25 feet. A shaft for ventilation is being sunk about 100 feet west of the hoisting shaft. The vein varies from six inches to a foot in width and is said to look well the whole depth of the mine. Galena, blende, pyrites with ruby silver and stephanite are the principal minerals found, but good specimens of the two latter are said to be now rare. The ore, on being brought to the surface, is divided into three classes:—1st. Smelting ore rich in galena, which is crushed, packed in bags and sent to Newark, N. J.; 2d. Amalgamating ore, poorer in galena, with more blende, etc., sent to the amalgamating works in Georgetown; 3d. That which is being collected until it can be dressed. Nearly parallel with, and above the Terrible, are the Brown lode, the U. S. Coin, and others which have hardly been developed. The ores are similar to those of the Terrible. The Brown ores are smelted at the company's works near the mine.

Some nine miles from Georgetown, on this same right fork of the creek, lies Bakerville, which consists principally of the Baker Amalgamating Works, the boarding house for the workmen, a saw-mill, and a couple of dwelling houses. The Baker mine lies some three to four miles distant, on the road to Gray's Peak on Kelso's mountain, and, I am told, some 13,000 feet above the level of the sea. This mine has become quite noted on the Stock Exchange, and also for the miserable way in which it has been worked. It is to be hoped, however, that better days have already commenced. The vein runs northeasterly and southwesterly, with a strong northerly dip. Three tunnels have been run and two shafts are being sunk. The vein varies considerably from others around Georgetown, containing, besides galena, blende, pyrites, and small amounts of ruby silver and stephanites, also considerable fluorspar with calcspar. I had but a very short time to devote to the mine, and could not examine it as closely as I should wish. But from what I saw and heard, I should judge that the large amounts of "chlorides and bromides of silver" which filled so prominent a part of the first reports on the mine, have concluded long since to remove to sunnier climes.

Any one who has travelled as far as the Baker lode will be certain to go to Gray's Peak, which is in the immediate neighborhood, the summit being not over two miles from the mine. And any one who ascends the Peak in favorable weather will be amply repaid by the view of mountains, plains, and parks, although one can hardly see the whole of the "broad American continent," which "spreads itself around as a centre, and stretches out its illimitable lengths before the eye," as Mr. BOWLES, in his enthusiasm, seems inclined to hint.

Beyond Gray's Peak, to the south and west of the range, lie rich silver districts, which want of time, however, prevented our visiting.

Up the left fork of the South Clear Creek, and about a couple of miles from Georgetown, is the Equator mine, one of the largest here. At the time of my visit new hoisting machinery was in the process of erection, and hence not much work was going on in the mine. There are in all four shafts, the main one being two hundred and seven feet deep, the others fifty to sixty feet. Galena, blende, ruby silver, and stephanite, with very little iron and no copper pyrites, (as I was informed by the superintendent,) form the ingredients of the ore. The smelting, or first-class ore, is sent to Newark, N. J.; the second-class, to the amalgamating works at Georgetown.

The above are the principal mines around Georgetown which have been worked continuously to any extent. There is a large number of other veins on which more or less work has been done at intervals; but those named—especially the Baker, Brown, Equator, and Terrible, and perhaps the Griffith—are the only ones which can be said to have been fairly developed, and they moreover represent the various characteristics of all found in this vicinity. The gangue seems generally to be a mixture of quartz and felspar, often with predominance of the latter, which commonly decomposes easily on exposure. The country rock is gneiss and granite, the latter more frequent than at Central.

With regard to its treatment, the ore is often divided into three classes (as given when speaking of the Terrible mine) which may be described simply as smelting ore, amalgamating ore, and ore for the dressing works.

The smelting ore from the Equator and the Terrible lodes is sent to Newark, N. J., although the transportation must cost some fifty dollars per ton. There are in the neighborhood of Georgetown two smelting works—STEWART'S and the BROWN company's; the latter, however, working only on its own ore. Stewart's works are very small, and the charges for treatment high, besides which, as I am told, he is unwilling to treat small amounts; hence it is found more profitable to send to the States, but of course only very rich ore can be sent. The Equator and the Terrible claim that their first-class ores run from six hundred to nine hundred dollars per ton—that ninety-five per cent. of the silver is guaranteed, and the lead also paid for, and that thus it is better to send the ore East.

The Brown company transport their ores from the mines to the works by means of a car running on wire ropes. Two classes are made, the one being nearly pure ore, the second containing more rock. The second class is stamped out and then buddled, the ore being concentrated to one-tenth of the original mass. The concentrated product, with the first class ore, which has been crushed in a Dodge crusher, is then roasted in a reverberatory furnace. The old furnace, being too small, is now being enlarged, and is to have two hearths, with a capacity of roasting a ton every six hours. After being roasted, the ore is smelted in a reverberatory furnace. A charge consists of about 3,000 lbs. ore, 600 lbs. iron, 1,300 lbs. lime, with matt from a preceding process and litharge from the expelling furnace; moreover, as the ore usually does not contain a sufficient amount of lead, galena ore is bought now and then and added. The products are:

(*a*) Lead—About 600 lbs. form a charge, or sixty per cent. of the amount held in the ore; this contains about two per cent. silver. (*b*) Matt, holding an indefinite amount of lead and silver; it is put back into the furnace. (*c*) Slag holding but very little silver; thrown away.

The furnace runs about twenty days in a month, being then stopped for want of ore and for repairs. The lead obtained is cupelled in an English furnace in one operation. The resulting silver is said to be generally about .990 fine. The litharge and the upper part of the test go to the smelting furnace. The bone-ash for the test is made at the works.

Amalgamation.—There are two amalgamating works—HUEPEDEN'S and STEWART'S—now in operation, and the Baker Company have works at Bakerville. The charge for amalgamating is very high—sixty to seventy dollars per ton—thus throwing out many ores which, when prices get lower, will be worked at a profit. About seventy-five per cent. of the silver in the ore is obtained. STEWART roasts in a reverberatory furnace, and then amalgamates in barrels and pans. His works are small and have been built up piece-meal, as his capital permitted, and cannot have a total capacity of over three or four tons per day. HUEPEDEN'S works are larger and apparently better conducted. The ore is dried in kilns, then crushed under stamps. Instead of the stamps, it was intended to use a Dodge crusher and then a ball-pulverizer. After being crushed, the ore is screened and then comes to the Brückner roasting cylinder. The cylinder is of sheet iron, lined on the inside with common brick, and contains an iron plate which is inclined to the axis of the cylinder, but which extends only part of its length, leaving an interval of about twenty inches at each end. As the cylinder is revolved the ore is continually shifted from one end to the other by the varying positions of the inclined plate.

It is claimed that thus the roasting is done thoroughly, in a short time and with a small consumption of fuel, and wherever I have seen the apparatus used it has been highly praised. A charge of ore is about thirty-five hundred pounds. This is roasted from one to two hours, (until the greater part of the sulphur is driven off) and then six to ten per cent. salt is added and the process continued from six to twelve hours, according to the nature of the ore. About four tons per day can be roasted and chloridized to about ninety per cent., *on dit*, in one cylinder. After this roasting and chloridizing the ore is cooled, screened and then amalgamated in Freiberg barrels. These barrels are four and a half feet by forty-four inches, and make sixteen to twenty revolutions per minute. A barrel holds twenty-five hundred pounds ore, with one hundred and fifty pounds scrap iron. Water is added and the barrels revolved one and a half to two hours, until the pulp has the proper consistency; the ten per cent. mercury is added and the barrels revolved sixteen hours longer. In the works spoken of, four amalgamating barrels are used to each Brückner cylinder. When the ore is amalgamated, extra water is added and the barrels revolved a short a short time; then the amalgam is let out; next the rest of the mass, which is washed over sluices with riffles (to collect any amalgam present) into dolly-tubs. These last are cleaned up weekly. The amalgam is retorted and the retort sold.

The Baker Mill, at Bakerville, is arranged to work in a similar manner. The ore is to be dried in kilns, crushed in a Dubois crusher, and then pulverized in a ball-pulverizer. Three Brückner cylinders, ten by five feet, made of quarter-inch iron, with a three-inch brick lining, are to roast and chloridize the ore. A charge consists of about three hundred pounds, which is roasted alone one to two hours, and then with five per cent. of salt, the whole process lasting six to seven hours, when the ore is to be chloridized to ninety-two or ninety-three per cent. A cylinder requires nominally one-half horse power to revolve it. About five per cent. of the ore is caught in the condensing chamber. From the cylinder the ore falls into a hopper, and is carried to a screen through a pipe, by means of a screw. The shaft of the screw is hollow, and through it and also around the pipe cold water is kept running so as to kill the ore. After being screened, the ore is amalgamated in six Freiberg barrels. These are four feet long and four feet in diameter, and are made of four-inch hemlock. They make twenty revolutions per minute, and are charged each with twenty-five hundred pounds ore and two hundred and fifty pounds iron (horse shoes.) Water is added and the barrels revolved two to two and a half hours; then twenty per cent. of mercury added and the barrels revolved sixteen hours; then extra water put in and the barrels run half an hour, that the amalgam may collect. While the barrels are still revolving the whole mass is to be let out, the amalgam caught for the most part in small iron dolly-tubs, and the rest cleared and settled in larger wooden tubs.

Two dressing works—of the Washington Mining Company and of the Wilson & Cass Company—were being constructed at the time of my visit. The former were to use KNOX'S patent air-dressers, the ore having been crushed previously in Dodge's crusher and Cornish rollers. The Wilson & Cass works are superintended by Mr. J. KURTZ. There are to be used an ore crusher and Cornish rollers, also thirty wet stamps, from which the ore is carried to continual jigging machines. Moreover, there are pointed boxes and Rittinger's percussion tables. The machinery is to be driven by water power as long as this is available, say nine months in the year; the rest of the time a steam engine will furnish the motive power. The capacity of the mill was rated at about fifty tons per day, and it was proposed to run on custom ore, although the definite arrangements had not been made public.

A. D. H. JR.

Electric Light.

PROF. FLEEMING JENKIN, of the University of Edinburgh, has patented some improvements in apparatus for producing electric light, especially applicable to beacons and buoys, which, by its use, may be conveniently lighted by a voltaic battery placed on shore, and communicating with the buoy or beacon by a submarine cable. The light is produced by a rapid succession of sparks, due to successive charges and discharges of a condenser charged directly from a voltaic battery, without the intervention of any induction coil. When the invention is used for this purpose the condenser is on the beacon, and the battery on shore is connected with a terminal on the beacon by a submarine cable or aerial wire. The condenser is charged and discharged by a tongue or contact-maker moving backward and forward between the battery terminal and an earth terminal. A somewhat similar plan has been adopted with a Ruhmkorff induction coil, but the new apparatus dispensing with the induction coil is less likely to get out of order, and converts a considerably larger proportion of the energy of the battery into light. The motion of the tongue may be produced by clockwork driven by a spring, which might be wound up in some cases by the motion of the buoy or beacon, as self-winding watches are wound. The motion of the tongue might also be produced by currents sent from shore through a second wire, which would move the tongue by an electro-magnet, as the tongue of a relay is moved in the usual Morse instruments; the tongue might also be moved by the motion of the buoy in some cases, and the tongue might also be worked in a manner analogous to the trembleur of the ordinary bells. In order to prevent the contacts where the sparks pass from wearing away too rapidly, the contact pieces may be made to revolve slowly, so as to distribute the action over a large surface. This motion may also be produced by the motion of the buoy or beacon when floating. The charges and discharges of a simple condenser are applied to the production of the electric light for

other purposes. When the invention is in connection with buoys or beacons, it is not essential that the condenser and contact maker should be on the buoy or beacon, as the spark can be sent through a considerable length even of a submerged cable. The spark may also be made to spring across a partial vacuum.—*London Mining Journal.*

New Leaching and Chlorination Process for Silver Ores.

BY GUIDO KÜSTEL.

II.

AFTER the ore has been discharged from the roasting furnace, it is ready to be leached. This process ought to be performed as far from the stamps as possible, in order to prevent the settling of the ore in the leaching boxes by vibration. At Flint the length of the O'Hara furnaces was quite sufficient to avoid this evil. The leaching boxes were placed not far from the discharge of the furnaces, over 100 feet from the stamps. Each box is 18 inches high, 7½ by 6 feet in the clear. Four inches of the space at the bottom is filled with small pieces of rock, covered with a piece of canvas, forming thus a false bottom to permit filtration. Close at the bottom is a hole containing a short piece of one-inch rubber hose, through which the leach is led into wooden troughs.

The ore is introduced into the boxes to within four or five inches from the top. A stream of hot water is then allowed to flow in. When the box appears full, the water-cock is shut off so much as to regulate the in and out flow, keeping the box always full. The leach which comes out through the hose at the bottom contains a great amount of dissolved metallic chlorides, and yields a thick precipitate if a solution of sulphide of sodium is added. These chlorides, having always a small portion of undecomposed salt in solution with them, dissolve some chloride of silver (¼ to 2 per cent.) It is therefore advisable to conduct the leach through a long zigzag trough, where the chlorides of lead and antimony, including the silver, precipitate by themselves. It should be remarked that the use of hot water is advantageous for two reasons: First, it dissolves the chlorides more easily than cold water; and, secondly, what is more important, the filtering of fine pulverized ore is easy with hot water, but too slow with cold water to make a practical use of it.

After two or three hours (depending on the quantity of base metals) the leach, when tested with sulphide of sodium, shows only a slight precipitate, whereupon the water is shut off. It takes yet from one-half to three-quarters of an hour before all the water runs through. The ore still retains too much water. If it were taken out as soon as no more water issues through the pipe at the bottom, it would not be only very inconvenient to transport to the amalgamating pans, but many millmen would consider the pulp too dilute even for the pan. For this reason the ore must be cut by means of a shovel, thrust simply through the mass down to the filter, at short intervals, over the whole surface. The water begins immediately to run out again. This operation may be repeated once more; and, so drained, the leached ore is now ready to be moved on cars over to the amalgamating pans.

The amalgamation of the leached ore is now a very simple process. Nearly all the iron chloride, a great deal of lead and antimony, and all the chloride of copper, are removed. The amalgam, nevertheless, will always contain more or less copper. This is due to the formation of sub-chloride of copper ($Cu_2 Cl$) during the roasting. This salt is not soluble in water, and hence remains in the ore; but in the pan it is easily decomposed by the metallic iron and amalgamated. As in ordinary amalgamation, the ore must be ground for two or three hours before the quicksilver is added. The pulp should be kept thick, as it then allows the quicksilver to remain in larger globules; but the whole mass must be kept in lively motion. From the time the quicksilver is introduced, the muller should be raised, as there is no grinding required during the amalgamation. It would only cause a heavier loss of quicksilver without giving a better result, provided sufficient grinding was done beforehand. The case seems to be different with unroasted ore. At Flint, the ore was subjected to grinding for three hours, and an equal time was allowed for amalgamation. The temperature is kept nearly at the boiling point by introducing steam. With roasted ore a high temperature is not necessary; it promotes too much the parting of the quicksilver, and to some degree, also, its evaporation.

After six hours, quicksilver and ore are discharged into settlers, and the amalgam is obtained in the usual way.

The leaching process is applicable also to the gold-bearing sulphurets, especially in the presence of copper, which, without leaching, interferes with the amalgamation of gold.

THE CHLORINATION PROCESS.

This was first applied to silver ores by KÜSTEL & HOFMANN. The chlorination itself does not differ from PLATTNER'S chlorination of gold-bearing sulphurets. Although the extraction of silver and gold separately is more perfect than pan amalgamation, the resulting metal finer and the process cheaper, there are at present two reasons that pan amalgamation is preferred. While the amalgam is obtained in five or six hours from the pan amalgamation, by a treatment which is the simplest of all metallurgical operations, the chlorination process requires 24 hours' time and more attention. Time and simplicity are the considerations. The chlorination process dispenses with the quicksilver, with the power for amalgamation, with the heavy investment for amalgamating pans and settlers, but it dispenses also with the superintendency of carpenters and engineers, a pet institution of most silver mining companies. The chlorination process is not in reality complicated. This objection is imaginary, and arises from ignorance of the process.

In almost all cases the silver ore must be subjected to roasting before being treated by chlorination. There are instances, however, where the ore can be chloridized direct from the batteries. So, for instance, the silver ore from the Mount Tenabo mine, Nevada, the stetefeldite, and partzite, and all oxidized ores free of sulphur. The silver ores of La Dura mine and the tailings of Trinidad mine in Sonora, treated by the chlorination process, are roasted with the addition of four per cent. of salt. Oxidizing roasting, however, is preferable in most instances, especially where no regard is paid to the extraction of copper. This is lost by an oxidizing roasting; but the silver comes out purer. No subsequent chloridizing roasting is necessary.

The roasted ore is introduced into tubs or boxes with a false bottom, like the leaching boxes described above; but it is important that the ore should be moistened before charging, only so much as to make it damp. In this state the ore is decomposed or attacked more perfectly by the chlorine than if it were dry. The vat is then covered and closed air-tight by a few bolts and india-rubber lining, and the chlorine gas is admitted through a pipe under the false bottom. By using over again the surplus chlorine, the la Dura ore requires for the production of chlorine, 8 pounds of sulphuric acid, 4 pounds of manganese, and 4 pounds of salt, per ton of ore. The time when the box is filled with chlorine is easily observed at a little hole in the cover, left open for that purpose. The chlorine may be detected either by the smell, or, better, by ammonia brought before the hole, which creates white fumes in contact with chlorine. This hole is then closed and the ore allowed to remain with the chlorine gas for 12 hours. The silver which is in the state of an oxide, or sulphate, is converted into chloride, as is also some iron and copper. Some of the oxidized ores, if chloridized without roasting, yield a great amount of chloride of iron. According to the more or less perfect roasting, there will be found more or less chlorine in the box after 12 hours' rest. This surplus of gas is utilized again by drawing it over into another already charged box. At La Dura this is effected by injecting water, which forces the gas into the next box through an india-rubber hose. This must be done with hot water, since cold water would absorb too much chlorine. The gas can be drawn over also by a soaking arrangement. All of the soluble base metal chlorides must be extracted first by hot water, as described in the leaching process. Two things, however, have to be considered in this first leaching. If, on account of the copper, the ore has been roasted with salt, or if, besides the copper, some gold was contained in the ore, the water will dissolve and carry out both the gold and the copper chlorides. The solution is conveyed into a tank, and the gold precipitated by sulphate of iron. After several hours, when all the gold has settled to the bottom, the clear solution is drawn off again into another vat, containing metallic iron scraps, for the precipitation of the copper.

After all soluble salts have been extracted by leaching with hot water, the remaining chloride of silver must be dissolved and leached out by hyposulphite of soda, or, better, by hyposulphite of lime, and then precipitated by the respective sulphides. The precipitate of sulphide of silver obtained by sulphide of calcium is easier to wash and to press, than that from sulphide of sodium. Where lime is to be found, the hyposulphite and sulphide can be made at small expense in the mill. One pound of burned lime and 1.35 pounds of sulphur give a solution of sulphide of calcium that will precipitate about one and a half pounds of silver. The hyposulphite of lime once produced will serve for years, as more than the wastage is replaced by the use of the sulphide of calcium, which turns into hyposulphite. Of the diluted hyposulphite of soda or lime (cold) so much is conveyed into the box containing the ore, as to maintain a constant flow from below the false bottom. The leach has a very sweet taste if silver is dissolved in it. It is conveyed into a tank and the silver precipitated by addition of a sulphide. No more of the sulphide should be used than the exact quantity necessary to precipitate the silver. This is important, because, after the precipitation, the solution is pumped out and used again on the ore. If then a surplus of the precipitant were in the hyposulphite, it would precipitate silver while in the ore and so much less silver would be obtained. On the other hand, when not all the silver in the leach is precipitated by the sulphide, no trouble results. It takes however only a little practice to enable the operator to neutralize the solution with ease. After the sulphide has been added the solution must be brought into rapid motion by some kind of a stirrer. The sulphide of silver separates quickly from the clear liquid. More sulphide of sodium is added; and if it should be observed that the precipitate appears whitish, it is a proof that nearly all silver is precipitated. This sign is however obtained only from the use of a polysulphide of sodium or calcium.

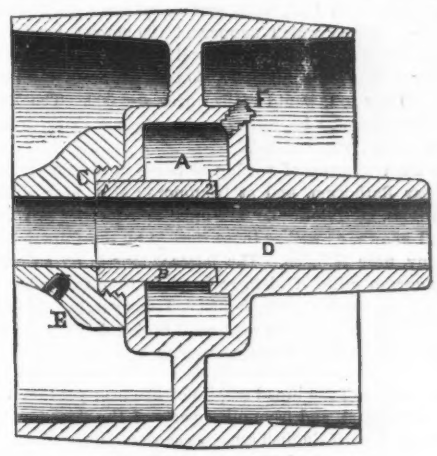
The precipitated sulphide of silver is brought into canvas bags or fitters, and leached with warm or cold water in order to remove the hyposulphite of soda. The washing is still more important when hyposulphite of lime serves for the extraction. The precipitate is placed under a heavy press to get rid of as much water as possible, and then dried in a reverberatory furnace. When dry, the heat is a little increased, whereby the sulphur ignites and burns off in a few hours. After this, the silver is ready to be melted in a crucible with addition of some scrap iron, without other fluxes. The iron takes up the sulphur left with the silver and forms a matt which contains some silver and is returned to the ore.

Mr. OTTOCAR HOFMANN, who introduced this process in La Dura, Mexico, uses iron retorts for the desulphurization of the silver sulphide, for the purpose of regaining the sulphur, which serves again to prepare the sulphide.

Stetefeldite and other oxidized silver ores, after being chloridized and leached, without being roasted, may be amalgamated in pans if preferred.

Self Oiling Loose Pulley.

NUMEROUS inventions have been made and applied to loose pulleys, to obviate the necessity of frequent oiling, and at the same time to insure the proper lubricating of the rubbing or bearing surfaces. These inventions have proved nearly worthless, because the method of oiling has consisted in the employment of cavities, cored out in the center of the pulleys and filled with cotton or woollen waste saturated with oil. This arrangement presents so large an evaporating surface to the air, that the oil is speedily gummed and rendered useless. The accompanying cut represents a patent self-oiling pulley, patented May 4th, 1869. These pulleys, after being filled, will run from two to six months, according to the size and speed,



SELF-OILING PULLEY.

without being refilled. The invention consists in an ordinary pulley, as seen in the cut, with a cavity, A, cast in its center for holding the lubricating substance. The bushing, B, is made of porous wood and surrounds the shaft, being held in position by the hub, C, screwed against it, so as to form an oil tight joint on its ends, 1 and 2. By these means the cavity, A, is entirely separated from the hole, D; and the oil in the cavity, A, slowly filters or strains through the pores of the wooden bushing, B, thereby removing all the gum and dirt from the oil before it comes in contact with the shaft. The more volatile parts of the oil, being held in an air-tight cavity, are retained, and the oil is preserved thin and limpid for any length of time. The oil-chamber, A, is filled through the hole, F, which is closed by means of a tapering screw-plug. The wooden bushing, B, can be removed at any time by unscrewing the hub, C, with a cant wrench placed in the hole, E.

These pulleys have been thoroughly tried the past year in a number of mills and shops, with the best results, proving the invention to be a valuable one. Further information can be obtained by addressing the Rollstone Machine Works, at Fitchburg, Mass.

Slate and Slate Quarries.

BY S. R. PATTISON, F.G.S.

The slate quarries of Cornwall are situate on the north coast of the county, and are approached by a long, dreary traverse over barren downs and poor uplands. They are called indifferently either Tintagel, from the well-known parish of that name on the cliff, or Delabole, from the name of the estate, about three miles inland, where slate has been extensively quarried. The principal quarries in the Delabole district are Bewithick, Trewarmett and Vicarage, Trenwith, Trevena, and Castle; and nearer, Boscastle, Grower, with Bury on the north. About 2,000 tons are shipped at the curious harbor of Boscastle. South of Delabole, about 16 miles, on the bank of the Camel estuary, in St. Breock parish, other quarries are worked, but Delabole is more than double the importance of all the others together. These slates are shipped to various parts of the United Kingdom, Belgium, and even to the West Indies and America. Although the trade of Cornwall is of comparatively recent origin, yet the production of slate, on a small scale for purposes of sale, has been carried on at Delabole for nearly three centuries. Carew refers to it in 1602, and Borlase, in 1769, says that about a century before this time, the Delabole slate was reported to be "perhaps the finest in the world." In 1769, the Delabole quarry was about 300 yards long by 100 yards wide; it was worked by small partnerships of men in stages; the produce was brought out of the pit on men's backs, and shipped at Port Issick. No quarry was then worked deeper than the influx of water permitted, nor larger than the united labor of four or six men could make it. Borlase's description will serve to give a picture of slate works a century ago.

The rock at Delabole is worked in an open excavation, which already occupies about 15 acres, and reaches in some parts a depth of 350 feet. The blocks of slate and rubble are detached from the ledges, and placed in iron kibbles, which are slung on a guide chain and drawn to the top by a chain worked over heads of timber on the edge of the pit, and on arrival at the top transferred to a movable platform, and then on to a tramroad, which leads to the deposit ground for blocks and to the rubble mound. The latter form huge mounds, visible from afar, and the more so as in many cases the debris is piled up vertically to 100 feet above the surface around the pits, making the total depth of the works from the summit of the rubble to the lowest floor 500 feet. The large slabs, suitable for manufacture, are taken to the machine sheds, where they are planed, sawn, and, if required, polished by steam power. The roofing slate blocks are cleft, either into recognized sizes of slates for shipment, or into less regular sizes, called "rags," for home consumption. The rags are divided into large and small, and into firsts and seconds in quality. The fragments too small

for these purposes are cleft into "scantle," the original form of roofing slate, answering to the moss-slates of the Welsh quarries. The slates for shipment are taken usually to Port Gavorn, a mere small beach, where small vessels can lie aground. Under favorable circumstances, by the aid of oxen wains and carts, a vessel of 60 tons can be loaded during the interval between two tides, but the breakage incident to rough carriage and rough usage render this mode of shipment very expensive, and inferior to that carried on in the harbors of North Wales. The Delabole quarries are crossed by a vein of quartz and poor lead ore, that "troubles" the stratification, and this has frequently occasioned slides in the rock, producing serious damage to the workings, and in some cases accidents fatal to workmen. The last, and the worst ever known, occurred in April, 1869, when sixteen persons were killed by the mass of rock which supported the poppet heads. Mr. ROBERT HUNT estimates the annual production of the slate quarries at Delabole at about 17,050 tons per annum, which at, say, £2.10 per ton, would realize over £42,000. The Devonshire slate quarries he estimates to produce 15,000 tons per annum—value, say, £37,000.

The Irish quarries of roofing slate are in the county Wicklow, near Rathdrum, and at Glanmore; also, near Killaloe, and at Ross, in Waterford. The great slab quarries at Valentia are well known, as well as those worked by the Imperial Slate Company, near Killaloe. The latter is situate on an area of twenty square miles of slate rock. The works have been extensive, two quarries producing 10,000 tons yearly. There are quarries at Eisdale, on the west coast of Argyleshire.

SLATE QUARRIES OF THE CONTINENT AND OF AMERICA.

There are considerable slate quarries on the eastern and western extremities of the broad empire of France; yet they are so far from the coast, and from other parts of the same territory, that the produce of English quarries successfully compete with them in all their principal ports. The chief slate district in France is that on the Loire, of which the city of Angers is the capital; 100,000,000 slates are annually raised and sold here. The next in importance is at Fumay, on the Belgian frontier. Connected with the former are the quarries around Vitré, near Rennes, and on the borders of Brittany. Detached slate works are also found at Bedour, in the Pyrenees, at Reives, in the lower Alps, and in higher Dauphiny. All, save Angers and Fumay, are of local importance only. The slate quarries at Angers commence not far from the city gates on the east, and extend for about five miles to Trelazé, the first station towards Paris. On passing the barrier of the city, a long street, chiefly inhabited by quarriers and small provision dealers, continues into a road, on the sides of which rubble heaps gradually appear, and the traveller finds himself in the midst of a large slate-making industry, almost before he has quitted the town. The quarries are opened on a zone of slate which traverses nearly east and west, but is economically productive, chiefly in the communes of Angers, Trelazé, and St. Barthélmy. Most of the work is carried on in mines, or galleries, extending from an open work; some altogether as mines. The rock lies nearly vertical, the country practically level; the excavations are, therefore, large. Steam power is used for lifting and draining. The rock is worked in banks, or stages, of nearly ten feet (9·843) each. Some of the quarries are 150 yards deep, with extensive mining works and rubble heaps, which form conspicuous features in the landscape. The yearly produce of these quarries is 150,000,000 of slates, of good quality. There are 4,000 workmen, whose earnings average 2s. 6d. per day, at the rate of 6s. 3d. per thousand, the workmen finding his own tools. Sunday labor is forbidden.

The quarries were formerly, like those in England, worked as small separate adventures, by individual proprietors. By degrees they have been taken up by wealthy partnerships and companies. The quarry owners form a union, like the iron-masters of England, and regulate the price of labor and of the produce. The quarrymen now work in small partnerships. Accounts are settled every two months, but guarantee is given to the baker by the purser of the quarry for provisions supplied between one pay-day and the next. Clubs for superannuation and for sickness are universal the ordinary funds for these are raised by the compulsory retention and appropriation of one per cent. on all earnings of the workmen. A workman on reaching sixty years of age becomes entitled absolutely to an annuity of £6 3s. 9d., besides the profit of one or two clearing sheds on the rubble heaps, which are assigned to him. Sick pay is 7½d. per day, and the quarry doctor gratis. The widow of a workman killed in the quarries receives an annuity of £23 15s. during widowhood. Education of laborers' children is compulsory; free schools are provided by the proprietary. On the whole, the quarrying population is intelligent and well to do. Many quarries have also been opened around the curious antique town of Vitré, and in some other parts of the slate zone on the borders of Brittany. The beds become nearly horizontal at this end of the deposit. Fumay, on the Meuse, is the centre of the small, long-established slate district of eastern France. The slates are quarried in the deep slopes which make the scenery there so picturesque and beautiful. The gorge of the Meuse, from Givet up to and through the slate country, is remarkably fine. The produce of the works is brought down to the capital high road leading to Metz, transported by the river flowing at the base, or by the railway which now traverses the valley. The trade is ancient, the quarries having been wrought continuously ever since the days of the Spanish occupation, in the 16th century. It is said that in 1623 slate was sent from this district to roof the church of Saint Jago de Compostella, in Spain.

There are a few places among the Alps where the secondary rocks are so greatly metamorphosed as to yield true slates. There are quarries on the Lake of Thun, also near the Allé Blanche, near Courtmayeur, and in some other places. True slate-bearing rocks have not been identified in the central or western Alps, but in the eastern portion of the chain and the Tyrol there are palæozoic strata yielding grey and green slates.

Portugal produces slates from the Silurian rocks near Oporto, but the universal use of tiles for roofing there is a bar to the production of roofing slate. There are large slab quarries. The roofing slate at Vallonga is said to be of the finest quality.

Roofing slate from the large development of palæozoic rocks in Nova Scotia were exhibited in 1862, and stated to occur in enormous quantities, and at several localities.

Slate-bearing strata are extensively developed in most quarters of the globe, and although veins of profitable slate are comparatively rare, yet there appears no doubt that the latter exists in sufficient quantities to supply the progressive demands of the world. There are vast sheets of palæozoic matter in the New World, far exceeding in area those of the Old World.

In the United States the lower Silurian, called Utica sandstone, acquires cleavage under the influence of trappean rocks, and ranges over an immense territory. Dr. BIGSBY says: "It doubtless underlies, in its place among the fossiliferous strata, the whole of the vast lands in the United States east of the Mississippi. It is well seen in the great fissures in the Ohio river and Cumberland, and surrounds in an extensive mass the Ozark mountains of Missouri." It extends for hundreds of miles every way.—*London Mining Journal.*

MINING SUMMARY.

Nevada.

THE COMSTOCK LODE—THE SIERRA NEVADA STRIKE.

ORE of extraordinary richness has been struck in the Sierra Nevada mine in the winze sunk fifty feet below the car track tunnel. The Virginia *Enterprise*, Oct. 20, says: "This winze followed a ledge of excellent red ore to the depth of thirty feet, when it suddenly changed to white ore, such as is so common in other portions of the Comstock, and formerly a prominent characteristic of the rich deposits in the Ophir and Mexican mines. This ore is soft and fine, like gravel, being easily picked down and shovelled, and car samples from it assay from $100 to $160 to the ton; thirty-two tons of it run through the mill yielded $4200. It looks like silver ore, yet it yields principally free gold, with only $5 or $6 per ton in silver. This rich ledge or deposit runs about northeast and southwest, with a northwesterly dip of about forty-five degrees, and has been drifted on to the extent of forty-seven feet. At the northeast end it has widened out to about ten feet and takes a turn to the northward. How far below this drift the vein extends is not as yet ascertained, but a winze is being sunk for that purpose. The ore is taken out through the winze which developed it, and is being run through the mill. Three shifts of men—four on a shaft—are working at it, but owing to the locality and great disadvantages of the present facilities for working, progress is necessarily slow and expensive. The winze is small, and constructed on less incline than that of the ledge, therefore a drift had to be made northward from it to connect with the ledge. With a proper shaft and a small donkey engine to do the hoisting, instead of a windlass and tubs run by two-man power, as at present, much better progress could be made, and the yield of the mine vastly increased. As it is, the next clean-up of the mill, at the end of the month, will be a big one. The huge body of rich decomposed ore and gravel at the northwest end of the surface workings is yielding handsomely, with plenty of ore both there and at other points to last for a year or two at least. The Sierra Nevada is the best paying claim on the Comstock at the present time."

INAUGURATION OF THE SUTRO TUNNEL.

The great Sutro Tunnel, of which so much has been said for the past four or five years, was commenced at Dayton on the 19th ult. The *Enterprise* says: "The day was not propitious. A rain storm that set in the night previous still continued, and clouds shrouded Mount Davidson and Virginia City. It was a drizzly, disagreeable morning, and damp even where there was shelter from the rain. Many who had intended to go down to see the tunnel started remained at home. However, a few went from Virginia City, Mr. Sutro being determined to start the work on the day appointed, in spite of wind or weather.

"AT THE TUNNEL.

"The tunnel starts in on the side of a low ridge at the foot of a large canyon, and will follow the canyon until it strikes the main range of hills. Below the mouth of the tunnel, and up and down the river, lie the lands of the company, situated on a plain which gradually slopes down to the river. The soil is rich, and with irrigation will prove very productive.

"STRIKING THE FIRST PICK.

"Before striking the first blow, Mr. Sutro took off his coat—as a miner should when going to work—then throwing the pick across his right shoulder, he turned about and facing those present made a very neat and appropriate little speech in regard to the importance of the tunnel, and the significance of this first blow of the pick about to be struck. He then dug out a small quantity of earth from the face of the cut. We had the honor of striking in the next pick, and James Phelan, President of the Workingmen's Association, came in for the next 'dig.' After this, many others took up the pick and struck a few blows upon the bank till a wheelbarrow load was dug out, when Mr. Jaqua, of the Golden Eagle Hotel, Dayton, shovelled the dirt into the barrow, and George P. Howe, one of the most enterprising men in Dayton and a subscriber to the tunnel to the amount of $1000, wheeled it out to the dump—first barrow of dirt for Howe. Cheers were now given for Sutro and the tunnel, anvils were fired, giant powder let off and there was a general jubilee.

"A GOOD OMEN.

"Just at this time the sun burst forth and a beautiful rainbow appeared to the northward. It was just 3 o'clock P. M., therefore the arch was very low, and the two ends seemed to be not more than a mile apart. This bow of promise was perfect in shape and tint throughout, and the west end seemed to rest within 200 yards of the end of the new tunnel. This was hailed by all as a good omen, and some even hinted that Mr. Sutro had ordered this rainbow expressly for the occasion.

"EXERCISES AT THE COURT-HOUSE.

"Leaving the tunnel, all hands returned to Dayton, and assembled in the Court-room, where the indoor exercises were to take place. Mr. Sutro was chosen President of the meeting, and made an earnest and sensible speech. His remarks were very frequently and loudly applauded. He said the tunnel must and shall be built; that he had struggled for four years to get the work started, and that he was proud to have it to say that at last he had struck the first pick at the mouth of the great underground highway. He mentioned the various branches that would probably be cut from the main tunnel, and predicted that eventually there would be in all 100 miles of tunnels in our mines—an "underground world," as he expressed it. He went on to say that although we have the richest mines in the world they have been "most damnably mismanaged." He thought that when the Sutro tunnel was completed a new and much more economical system of mining would be adopted; that the swarms of officials as superintendents, secretaries, etc., would be dispensed with, and much money saved in this way to companies. Judge Haydon was called for when Mr. Sutro had concluded, and made a very neat little speech. He said he was heartily in favor of the tunnel, and would do all he could to forward the work of constructing it; yet he was not disposed to quarrel with those who were unable to see the advantages likely to accrue to the country by the building of such a tunnel. He presumed that those who opposed the work were probably as honest in so doing as he was in advocating it.

"Judge Haydon was followed by Mr. A. B. Elliott, of this city, who made a very neat and appropriate little speech, which drew repeated rounds of applause. The band 'discoursed' excellent music between the speeches, and a right jolly time was had by all present. The Daytonites are strongly in favor of the Sutro tunnel, as they should be, for it will be a great thing for them when completed."

RICH STRIKE IN THE YANKEE BLADE MINE, REESE RIVER.

A strike of rich ore has been made in the Yankee Blade mine of the American Company. The working of the present company is through a vertical shaft, which is now 300 feet deep. At this depth a level was begun, which was intended to reach a well known chimney in the mine; and in the slight length of 30 feet the edge of the body of ore was cut. This famous bonanza was tapped a couple of years ago by the company which then owned the mine, and the product of very rich ore was remarkable. Its fuller development will be watched with interest.

COPE DISTRICT.

The Elko *Independent*, October 30, says:—"We have seen several parties this week direct from Mountain City, and they all bring in good reports from the new Eldorado. Where work has been done on any of the ledges they continue to improve in both quality and quantity of ore. The town is rapidly improving, and already wears quite an imposing appearance. Several large stone houses have been completed, and many more are under way, to say nothing of the many comfortable wooden structures and the scores of canvas houses that dot the hill-sides. The Drew & Atchison mill will soon be ready for work, which event will be hailed with joy by the miners. McDonald, the assayer, is kept busy in testing ore from the many new discoveries that are constantly being made outside of the town. Life and activity prevail everywhere, and all have unbounded confidence in the district proving equal, if not superior, to White Pine.

"WYOMING DISTRICT.

"This new district, lying some thirty miles north-east of Cope, is beginning to attract some attention, and is spoken of in the most favorable terms by those who have visited it. G. F. Griffiths and J. H. Wales came direct from there last Saturday, and express themselves well satisfied with the district. Both silver and gold ledges are found that crop boldly above the surface. Placer diggings are also found, and will average $17.50 per ounce. The district is well organized with the view to the security of locators. The town of Wyoming is pleasantly located. The district is on the dividing ridge between Owyhee and Bruno Rivers. Water is somewhat scarce, but can be had in quantity several months during the year.

Alaska.

DETAILED ACCOUNTS OF THE GOLD FIELDS—INDIAN DIFFICULTIES.

The San Francisco correspondent of the *World*, writing under date Oct. 22, says:—

"The revenue cutter Lincoln lately went on a cruise from Sitka to the villages of the Takoo and Auk Indians, from which places specimens of gold were brought in to Sitka by the Indians. This news created quite an excitement in the town, and a party of men left on the Lincoln to 'prospect.' They were landed with their tools, provisions, and canoes, and with Indian guides, at the place designated by the Indians as nearest where the gold was to be found. The Lincoln proceeded on her cruise and returned to Sitka after an absence of a week. By a late arrival we have dates from the latter town to the 26th of September, with particulars of the adventures of the gold-hunting prospectors, who returned to Sitka a week after the Lincoln's arrival there. The prospectors made a two days' trip of river navigation in an open boat, when they arrived at a valley inhabited by Kake Indians, who were very unfriendly. 'They wanted no Boston (i. e. white) men among them,' they said. The miners travelled pretty thoroughly over that section of the island, and report finding five streams, all of which empty into the bay near together, and upon examination found gold in all of them, but the richest deposit was found some four or five miles up the main stream, at the foot of a fall some hundred or more feet high. They state the water power to be sufficient to furnish the miners with all the water necessary to water the entire flats. They found both scale gold and gold in little lumps, or, as they termed them, 'ingots.' They are confident that with proper mining improvement they can make $20 a day. They commenced panning out, and averaged twenty cents to the pan; but when the Indians found that they were keeping the little particles found in the sand they became troublesome, and threw down the sand as fast as it was shovelled up, took away their ammunition and some of their provisions and clothes. They asked if the 'Boston men' intended to build houses there and live there. On being told that it was uncertain, they said they would not let them do so. They ordered the miners away, and threatened to kill them if they did not go. They spoke severely of General Davis, and denounced the Takoo Indians. It is supposed that they are sore and bitter about having lost their villages, which were burnt by General Davis' order last spring."

The Alaska *Times*, of September 25, makes the following comments on the reported gold discovery:—

"The party of miners who went up in the neighborhood of the Takoo country to prove the truth of the Indian reports concerning the existence of gold there, and of which we made mention two weeks ago, have returned to Sitka.

"They left this place on the revenue cutter Lincoln, which was bound for the Auk country with General Davis and staff, to inquire into some slight disturbance that had occurred a little before. Among the miners were James Stricken and Fred. Douglass. The cutter landed the party, with their implements, food, etc., which had been principally furnished by our townsman David Shirpser, at a place called Lent-Tan. Two days' canoe voyage brought them to the creek where the Indians said they had found the gold.

"There they found a village of what they supposed to be Kake Indians, the tribe whose villages on Kou Island General Davis had destroyed last spring, as one of the chiefs had a paper or certificate

which entitled him as of that tribe. This stream empties into the bay, about opposite Kake or Kou Island, a little north by west. They found five other streams emptying into the bay near together, and upon examination found gold in all of them; but the richest deposit was found some four or five miles up the main stream at the foot of a fall or cascade of some hundred feet or more. They state the water is sufficient to furnish miners with all the water power necessary to work the entire flats. All of the creeks are so situated that they can be turned one into another, and thus leave the flats dry. The Indians say these creeks are nearly dry in the summer. One California pump, worked with water power from the falls, would drain a section. In the beds of these creeks they found scale gold. Below the falls mentioned they found rough ingot and scale gold. They are confident that with proper mining implements they can make twenty dollars a day. They commenced panning out, and averaged twenty cents to the pan; but as soon as the Indians saw they were keeping the little particles found in the sand they became troublesome, threw down the sand as fast as they shovelled it up, took away their ammunition, some of their provisions, and stripped Douglass of all his clothes. They asked if the Boston men intended to build houses there, to which the men replied they did not know. They said they didn't want the Bostons to live there, and they would not let them. They ordered the miners away, and threatened to kill them if they did not go. They spoke severely of General Davis, and said if they had him there they would cut off his head. They also denounced the Takoo Indians.

"These men have told their story in a plain, unvarnished way, and we believe what they say is entitled to full credence. They are practical miners and anxious to return, but wish to be accompanied by an armed party. Our citizens feel deeply interested in this favorable report, and especially as samples of the gold, scale and ingot are before us, the best evidence possible of the truth of the discovery. Next spring there will be a good deal of stir among us to test the value of these diggings, and not only these, but the placer and other mines discovered on the Copper, the Takoo, and Chilcat.

"The evidences of Alaska being a gold-bearing country accumulate weekly, and we do not doubt that ere long it will be found as rich in the precious metal as any other portion of the Pacific Coast. The coast mountains of Alaska are a continuation of the great Sierra Nevada, whence all the rich ores have been taken. Our people are very sensible, for although we have known of the existence of gold for two years, we have never tried to create any flash excitement or bubble scheme for money making, and shall never allow ourselves as a journalist to publish any account, unless we are convinced it is true. We desire population, but we wish it a steady, sure emigration—a people understanding what they must encounter, and that labor and capital is required, hand in hand, to upbuild the territory and a future State.

"Already we have found, close to the coast, and bordering all along it, copper, mountains of iron, vast beds of coal, and mountains of marble. Our waters, too, hold the wealth of a nation, and our forests are sufficient to build the commerce of the world.

"All these are only matters of strong inducement for the immediate organization of a civil government, that we and the country at large may quickly realize the purchase money of Alaska. We look forward hopefully, but not enthusiastically. We feel strong in the conviction that, despite all that is said condemnatory of our territory, ten years will see it as populous as Washington Territory or British Columbia is to-day."

The prospectors have sent the following statement to the *Call* of San Francisco, which shows that the *Times* is inclined to exaggerate the reported discoveries, with the object of creating an excitement:

"We, James Strickan and Fred. Douglass, went up to prospect in the neighborhood of the Takoo country, and agree with the statement made by the Alaska *Times*, with the exception of the amount of return to the pan, which is an exaggeration. We should more safely say five cents to the pan, which is nearer to the mark. But if parties were promptly supplied with implements, it would make a rich return. In fact, all parts of the territory that we have prospected in are rich in precious metals and copper. The reason for the statement made by the Alaska *Times* is obvious. We think it is supported by the store-keepers of the place, for, as a matter of course, it is or would be to their interest to create an excitement. If there should be a rush up here, it would be just to have a more thorough examination, so as to exonerate the men who prospected. This statement is made for our own protection."

Colorado.

TUNNELING ENTERPRISES.

We condense from the Georgetown *Miner*, Oct. 21, the following interesting summary of mining news:

"PAR TUNNEL.

"This tunnel has been pre-empted by D. T. Griffith, Esq., for the purpose of ultimately exploring the rich belt of lodes that have been discovered on Republican and Sherman mountains. The immediate object of securing this tunnel site is to explore and develop the Par lode. The face of the tunnel is situated immediately below and south of the discovery of the 'Par.' The ground is favorable for gaining great depth—the estimated distance from the mouth of the tunnel to the lode being about three hundred and fifty feet, and the depth gained being nearly four hundred feet.

"Work has already been commenced on this great and judicious enterprise, and responsible parties have offered to drive the tunnel one hundred feet for eighteen dollars per foot, lineal measurement, and do all the necessary timbering. We consider the location of the Par Tunnel site one of the very best in Griffith Mining District.

"The projected line of the tunnel will cross the following well-known lodes: Par, Monster, Caledonia, Hise, Silver Eagle, William Lee, Omaha, Snowdrift, Silver Plume, Sterling and Amador. These lodes, and a great number more, the names of which we have been unable to obtain, situated on the south face of Republican and Sherman mountains, will find an outlet for their untold ore wealth through the Par Tunnel, when this gigantic enterprise shall have been completed.

"There can be no doubt concerning the existence of 'blind lodes,' as they are termed by miners, in all mountains where true fissure veins are discovered on the surface. This fact, therefore, taken in connection with the lodes already discovered on the above-named mountains, renders the expenditures of capital in the construction of tunnels certain and profitable for all future time.

"TOM THUMB LODE.

"This lode is situated on Leavenworth mountain, a short distance east and above the great Equator lode. The crevice is full eight feet wide, showing well-defined walls, and carrying a strong deposit of very rich mineral fourteen inches in width on the north and eighteen inches in width on the south wall. The two veins are separated by a 'horse' of feldspathic rock. The discovery shaft has gained a depth of twenty feet, and has yielded one thousand pounds of ore that was sold to Professor Hill for $389 in currency, and we saw at the mine one thousand pounds of ore worth as much or more than that purchased by Professor Hill. A pretty good showing for fourteen days' work.

"Select specimens of ore from this mine have yielded by fire assay $1200 and $3000 per ton of 2000 pounds.

"MORE TUNNELS.

"In connection with the property above described, a number of gentlemen have pre-empted three tunnel sites, named respectively, 'Webster,' 'Faun' and 'Croston,' thereby securing fifteen hundred feet of territory both for tunnelling and for attaining great depth under the mountain, and cutting the following well-known lodes situated on the south face of Leavenworth mountain, in the following order, viz.: Croston, Eclipse, Forbes, Troy. Tom Thumb, Creole, Argentine, 'Harrison Berry,' Castillo, Peep O'Day, Montezuma, Rocky Mountain, P. H. Rhodes, Jackson, Hiland, Right Bower, Gregory, Livermore, Williams, and Mary Ann. All the above-named lodes have a good width of crevice between walls, and shafts varying in depth from ten to forty-five feet. Specimens from nearly all the lodes have been assayed by experts, and the results obtained show an average yield of $475 in silver, coin value per ton of 2000 pounds.

"A sufficient amount of work has been done on the above-named tunnels to secure a title under the statutes of the territory to fifteen hundred feet of ground. We are credibly informed that a large interest in all the above-named lodes has been secured by the projectors of this great tunnel enterprise.

"WATER POWER.

"The volume of water in Leavenworth creek is sufficient to furnish any amount of water power for propelling machinery. In the immediate vicinity of the tunnel sites, a water power has been secured and pre-empted which can be improved at slight cost.

"We are well assured by many and careful examinations, that the men who have determined to explore Leavenworth mountain by means of tunnels, are possessed of good, sound, practical judgment.

"LINN TUNNEL.

"A fine body of ore has been 'struck' in the Linn Tunnel. The work of driving into Leavenworth Mountain is continued briskly, revealing a large deposit of ore, and still the heading of the tunnel is in the crevice material, and no north wall developed.

"NOTES ON VARIOUS MINES.

"Recent assays from crushed and sampled ore from the drift in the Brown mine gave an average assay of over 400 ounces of silver to the ton. From present indications this company will ship not less than a thousand pounds of silver bullion next month.

"On Monday last work was commenced on a cross-cut to tap the Grand Trunk lode, on Brune Mountain, at a depth of fifty feet. The ore from this vein is sulphurets of silver, galena and zinc blende, and shows, by assay, a yield of from 65 to 806 ounces of silver to the ton.

"Before another issue the Brown Company will have shipped another of those immense masses of silver bullion. Our Philadelphia friends must not infer from these frequent shipments that silver spoons are getting scarce here, for they are not. There are still enough to meet the demand.

"A day or two since we saw at the Bank a fine bar of silver bullion, weighing 1500.2 ounces, 795 fine, coin value $1,542.06. It was from Equator ore, reduced at the German Reduction works of L. Huepeden & Co.

"TERRIBLE.—We are informed by Fred. A. Clark, Esq., that he has lately obtained the enormous yield of $30,964.44, per ton of 2,000 pounds, from a selected specimen of black sulphuret ore from the Terrible mine.

"Jacob Snider, Esq., is sending several tons of Snowdrift ore to Mr. Bateman's chloridizing and amalgamating works, at Mill City, for treatment.

"The east slope at the Terrible mine is now in an eight-inch vein of most excellent ore.

"Mr. Symington is sinking on the vein in the Baltimore tunnel. We learn that the quantity of ore improves with depth.

"In the Baltimore tunnel they are laying track, preparatory to starting up their Burleigh drilling machinery.

"The Equator mine is still yielding a large quantity of second class ore that is producing more silver than any previously treated.

"At the Marshall tunnel they have been testing the practicability of single hand drills and Giant powder, the results being eminently satisfactory."

Montana.

AFFAIRS AT HIGHLAND.

A correspondent of the Helena *Gazette*, writing from Red Mountain City, Sept. 30, says:—"The rich strike on No. 28 below in the main gulch proves to be a regular streak instead of a "spot," as some supposed, and $798 to the set of eight foot timbers is not much above an average of the ground.

"There are now four bed-rock flumes to bed-rock in Highland gulch and its tributaries, viz.: the Coolie Co., Frazier & Co., Schafer & Co., and Frank Beck & Co., and another season, with plenty of the aqueous element, will unearth very large quantities of 'Highland straight.'

"The 'Red Mountain Bed-rock Flume Co.,' whose works are about a mile and a half below Red Mountain City, and below the confluence of all the gold bearing tributaries of Highland gulch, have suspended operations for the season on account of the scarcity of water. The twenty-four hours' water of the gulch, by reservoiring, would run the flume but four hours at the time of closing. This company have shown considerable perseverance in prosecuting this work for two years at an expense of but little less than $20,000 up to the present time. They have a 20-inch flume down 1,000 feet, with four inches grade to the twelve feet, and are twenty-one feet nine inches deep at the head of their cut, being about two feet into a stratum of gravel that lies next the bed-rock in the worked portions of the gulch, which is from four to six feet thick. This company owns over 3,000 feet of ground above their cut, and they have abundant dump to work all the upper portion of the gulch and its tributaries, which will ultimately be worked out through this flume, after the ground has ceased to pay, by the drifting and stripping methods of mining. Negotiations are now being made for the erection of a derrick for the handling of the boulders another season, and with abundance of water and other additional facilities for working, the company expect to make progress at the rate of thirty-six feet per week next summer, which must soon bring them to bed-rock, I confidently believe, in the richest portion of Highland gulch, as ten cents to the shovel full of dirt has been obtained 300 feet ahead of their cut, at a depth of sixteen feet, where it was impossible to reach bed-rock on account of quicksand. I believe that another season's operations will place this among the most successful companies in the Territory.

"Professor Swallow's mill is now running upon ore from the Only Chance lode, and it is understood that negotiations are pending for the purchase of 600 feet of the property by the Highland Gold Company, including discovery. This lode is developed to a depth of 200 feet, with a tunnel 345 feet long, striking the vein at a depth of 112 feet, and a shaft some eighty-seven feet below the adit level. At this depth the lode shows increased richness and undoubted permanency. A shaft has been run 440 feet to strike the Nevins lode on the same hill, and though work has been suspended till winter, it is expected that a very few more feet will uncover the vein at a depth of 125 feet. The owners of the Myers & Thompson silver lode, near the Nevins, have run a tunnel of 175 feet, and according to the survey have but forty feet further to run to stride the lode 130 feet from the surface, which will probably be accomplished this winter."

COAL IN DEER LODGE COUNTY.

The arrival of two loads of coal into Deer Lodge City, from the new mines in the eastern part of the County, is noted in the *Independent* of October 6. Speaking of the mines and the value of their product, the Editor says:—

"These mines were discovered about three months since by Messrs. Embody & Morgan, a notice of the discovery of which appeared in the Helena papers about the time. We are informed by one of the discoverers that the vein is about nine feet thick, and lays in a horizontal position with a slight dip to the east. A number of holes have been sunk, and it is believed that this coal field covers an area of about one thousand acres. This coal presents a fine glossy appearance, is of the bituminous quality, free from mineral substances or other impurities, and burns in a stove or grate with a clear and heating blaze, leaving scarcely any ash or cinder from combustion. This is destined to prove a valuable acquisition to this county, and will supply a want that has long been felt by its blacksmiths. For economy and convenience it excels wood for fuel, and always takes its place for heating offices and business houses where it can be obtained. This coal field is situated about thirty miles from this place, on the Mullan road, and about one mile this side of Mullan's Pass. The discoverers were prospecting for gold when they found this mine, more valuable than gold. They say they can mine this coal for about $10 per ton, and it can be transported to this place for $15 more, making the cost at this place $25 per ton. The route from the mine is over the Mullan road the whole distance to within four miles of this place."

Tennessee.

THE ÆTNA COAL MINES.

An exchange has the following account of this property: "The Ætna Coal Mines are owned by a New York company, called Raccoon Mountain Iron and Coal Company. J. C. Hazleton, of New York, is President; Milo Pratt, of Chittanooga, agent. The capacity of these works is about ninety tons per day, or two thousand per month. They are the best mines in Tennessee, it is thought. The diameter and the ventilation of the shafts are very fine. The ventilation is accomplished by means of furnaces. The coal bed is about three or four feet, in some places as thin as twenty inches, and in some reaching seven feet. All the coal is saved, and the slack is made into coke. The coke from this mine has the best reputation of any in the market. It is worth from twelve to fourteen cents per bushel.

"The coal costs about $3 45 per ton, or 13½ cents per bushel, delivered in the cars. The working force is 125 men, of whom forty-three are miners. The whole mining force is imported from the northern part of England; and the agent informed us that they were the best and most courteous workmen he had ever handled. A party of ten were imported a few days ago. Their wages are from three to five dollars per day. The coal is sold for 13½ cents a bushel, at the works. The principal markets are the Southern States. These works were founded in 1855, and over $250,000 were expended on them. The composition of the coal is this: Carbon 73, gas 21, ashes 350, sulphur .071, and balance moisture. The coal does not carry well, and hence is not very desirable for domestic use; but being almost entirely free from clinker, and giving great heat, it is splendid for the use of manufacturers. Almost every mill and factory in this State, as well as East Tennessee, use this coal. The mines are about a mile and a half from the railroad, near Whiteside station. They are situated upon the top of the mountain, and are reached by a train of cars which are moved by a stationary engine. The grade is about 500 feet to the mile. There are two tracks laid, and as one loaded train is coming down the plain, pulled by gravity, it pulls the other up."

Michigan.

THE COPPER DISTRICT.

The following September products are at hand:—Evergreen Bluff Mine—mass, barrel and stamp, 12 tons, 1,337 lbs.; Knowlton Mine—mass, barrel and stamp, 10 tons, 260 lbs.; National Mine—mass, barrel and stamp, 18 tons, 1,304 lbs.

At the annual meeting of the stockholders of the Nonesuch Mine, held in Ontonagon recently, the following gentlemen were elected Directors for the ensuing year: Wm. Willard, Jr., L. M. Dickens, W. W. Spalding, Wm. Van Schaick, Thomas Hooper.

THE IRON DISTRICT.

The Receipts of ore and pig iron at Marquette, up to and including Saturday, October 16th, 1869, by the Marquette and Ontonagon Railroad, were as follows:—

		Previously Reported.	Past Week.	Total.
Lake Superior Iron Co.,	Iron Ore	111,599	2,590	114,189
Cleveland Iron Mfg. Co.,	"	34,782	1,106	35,888
Marquette Iron Co.,	"	2,795	.....	2,795
Washington Iron Co.,	"	41,205	2,194	43,399
Edwards Mine,	"	20,031	269	20,300
New England Iron Co.,	"	10,397	789	11,586
Champion Iron Co.,	"	13,095	1,140	14,234
Ore to Local Furnaces,	"	20,107	818	20,925
Total Iron Ore (tons)		254,011	8,906	262,917
Bancroft Iron Co.,	Pig Iron	2.618	69	2,687
Collins Iron Co.,	"	3,552	.....	3,552
Morgan Iron Co.,	"	4,742	222	4,964
Michigan Iron Co.,	"	6,726	. .	6,726
Deer Lake Iron Co.,	"	28	.....	24
Total Pig Iron (tons)		17,666	291	17,958
Total Ore and Pig Iron (tons)		271,677	9,197	280,875

New York.

DISCOVERY OF IRON SAND ON LONG ISLAND BEACH.

The people of Quogue have recently become somewhat excited by the discovery on the beach at that place of a fine black sand, which is found in large quantities and is supposed to be iodide of iron. Specimens of this ore have been recently exhibited, and it is pronounced a fine quality, capable of producing an excellent quality of steel. Attention was first called to the existence of this ore by a chemist in the employ of the owners of a factory built near that place a year or two since for some manufacturing purpose, but the business not proving lucrative the work was subsequently abandoned. This dark mineral deposit is found along nearly the entire southern shore of the island. Several parties from New York have recently been on a tour of inspection from Fire Island to Montauk Point, with a view of finding suitable locations for factories.—*Ex.*

MARKET REVIEW.

The Coal Trade.

NEW YORK, Nov. 5, 1869.

ANTHRACITES.

WHOLESALE.—The market has been feverish during the past week, with a sharp demand for all sizes, but an overwhelming demand for Stove, which seems to be scarcer than diamonds; the price is $9 00@9 50. White Ash Stove has been sold as high as $9 75 on dock at New York during the past week, and the demand continues without much sign of abating. The consumers generally seem to have taken the advice of the Daily Press, *to wait and coal would be lower;* this, at a time when prices were moderate and stocks might have been laid in at a slight advance on prices current for the past few years. The newspaper articles written in profound ignorance of the subject matter have raised a very strong—but altogether unfounded—prejudice against the producers and dealers in coal; and has also caused a great many people to defer purchases until the present time, when they will have to pay 25 to 35 per cent. more, for their confidence in their daily newspapers. The prices fixed by the Lehigh Exchange yesterday, were as follows:

Lump, $8 50; Broken, $8 00; Egg, $8 00; Stove, $8 50; Nut, $7 00.

A noticeable feature of the present state of the trade is that it is almost impossible to obtain coal purchased from some of the large companies, especially Stove Coal, purchasers having to pay from one to two dollars per ton above a fair rate of freight in order to get vessels to wait for the coal. People should bear these facts in mind when they are about to purchase.

All of the Lehigh region, except the works of Messrs. A. PARDEE & Co., have resumed operations; but inasmuch as the season is nearly closed, the demand for Lehigh Coal for Eastern and Northern shipment, will keep prices up to the present quotations until December, if not longer. The prospect favors great activity in the market as far ahead as January 1st. The following are prices at Mauch Chunk:

Lump, $4 75; Broken, $4 75; Egg, $4 75; Stove, $8 00; Chestnut, $4 25.

The Pennsylvania Coal Company have issued the following circular:

NEW YORK, Nov. 1st, 1869.

Present prices for Pittston Coal, subject to the usual conditions of sale and shipment. The Company reserves the right to decline sales, or to advance prices at any time, except upon contracts made prior to such advance.

	Delivered at NEWBURGH.
Lump, per ton of 2,240 lbs.	$6.40
Steamer, " "	6.40
Grate, " "	7.00
Egg, " "	7.50
Stove, " "	8.25
Chestnut, " "	6.60
Pea, " "	....

Seventy cents per ton additional for delivery at New York. The above prices are for cash.

GEORGE A. HOYT, Treasurer.

Vessels are moderately plenty. Freights, by barges not so high, now rule 70c. to 75c. to New York. The Central Railroad bridge is fixed to-day, so that Port Johnston will be again open.

PHILADELPHIA, Oct. 3, 1869.

The market is quite active, and prices have an upward tendency. The Lehigh Coal Navigation Company have not yet made their prices for this month. Freights remain unchanged.

The following table exhibits the quantity of Coal passing over the following routes of transportation to tide-water, for the week ending October 31, 1869, compared with the same time last year:

COMPANIES.	1868. WEEK.	1868. TOTAL.	1869. WEEK.	1869. TOTAL.
Phila. & Reading R.R.	78,196	2,658,981	113,042	3,166,455
Schuylkill Canal	33,924	809,474	13,864	549,319
Lehigh Valley R. R.	56,762	1,054,537	40,844	1,730,575
Lehigh and Sus. R. R.	18,054	417,197	33,403	727,656
Lehigh Canal	37,964	835,428		584,030
Scranton North	19,405	512,644	18,808	339,699
" South	20,828	902,101	20,031	831,136
Penn. Coal Co., rail	19,803	773,808	19,968	807,957
" " " canal	478	25,930	832	16,086
Del. and Hudson, rail			5,384	121,619
" " canal, north	45,864	1,400,825	51,776	953,107
" " " south			6,720	35,448
Shamokin	10,162	406,022	14,934	357,456
Trevorton	1,598	25,121	1,538	26,860
Short Mountain	4,050	100,826	2,948	90,085
Lykens Valley Coal Co.	1,834	74,776	2,971	62,714
Huntingdon & Br'd Top	6,885	220,801	8,129	297,057
Wyoming South	13,805	289,011	12,380	275,528
" North	4,861	74,417		53,727
Williamstown, Col'y	5,137	155,498	6,101	168,497
Total	380,710	11,637,487	383,341	11,261,954
1869		11,261,954		
Decrease		375,533		

Schuylkill Coal Trade.

Report of coal transported over the Schuylkill Canal for the week ending Thursday, October 28, 1869.

	Tons. Cwt.
From Port Carbon	5,780 05
" Pottsville	169 00
" Schuylkill Haven	7,380 10
" Port Clinton	534 00
Total for week	13,863 15
Previously this year	535,455 00
Total	549,318 15
To same time last year	809,473 13

Report of coal transported over the Philadelphia and Reading Railroad during the week ending Thursday, Oct. 28, 1869.

	Tons. Cwt.
From St. Clair	39,884 10
" Port Carbon	8,692 04
" Pottsville	6,331 07
" Schuylkill Haven	35,168 04
" Auburn	4,033 02
" Port Clinton	14,858 06
" E. P. R. R.	67 07
" Harrisburg and Dauphin	12,522 14
Total paying freight	121,627 14
Coal for Company's use	4,095 18
Total for week	125,723 12
Previously this year	3,520,564 13
Total	3,646,288 05
To same time last year	3,085,924 15

Report of Coal Transported over Lehigh Valley Railroad

For the week ending October 30, 1869, and previously this season, compared with same time last year:

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	PREVI'S Y. Tons. Cwt.	TOTAL. Tons. Cwt.
Total Mahanoy	12,813 01	367,062 19	379,876 00
" Beaver Meadow	6,276 10	341,679 17	347,956 07
" Mauch Chunk	10 14	683 19	694 13
" Upper Lehigh		8,581 11	8,581 11
" Hazleton	6,285 09	695,503 08	701,788 17
" Wyoming	18,713 16	377,293 00	396,006 16
Total	44,099 10	1,790,804 14	1,834,904 04
To Lehigh & S. R. R., at P'n. Hav. for rail		4,562 07	4,562 07
Do. for canal		120,734 09	120,734 09
At Mauch Ch'k for canal		97,546 03	97,546 03
Total Anthracite	44,099 10	2,013,647 13	2,957,747 03
Bituminous Coal recv'd from Cata. R. R.			
N. C. R. R.			
E. P. R. R.		11,883 00	11,883 00
P. & N. Y. C. & R. R. Co			
Fall Creek			
Schroeder			
Towanda			
Total by rail and canal	44,099 10	2,025,530 13	2,069,620 03
Same time last year	66,211 05	2,256,436 10	2,324,647 15
Increase			
Decrease	25,111 15	229,905 17	255,017 12
Forwarded East from M'h Chunk by rail	40,843 08	1,739,574 05	1,780,417 13
Same time last year	53,887 11	1,954,637 17	2,008,525 08
Increase			
Decrease	13,044 03	215,063 12	228,107 15

RECAPITULATION.

Forwarded East from M'h Chunk by rail	40,843 08	1,739,574 05	1,780,417 13
Delivered at M'h Chunk	46 19	754 10	810 09
Delivered on line of road above Mauch Chunk	523 07	6,900 14	7,424 01
Delivered above M. Chunk for use of L. V. R. R.	1,638 07	37,091 06	38,729 13
To N. C. R. R., at Mount Carmel		2,516 09	2,516 09
Forwarded North from L. & B. Junction	995 12		995 12
To L. & S. R. R., at P'n Hav., for railroad		4,562 07	4,562 07
Do. for canal		120,734 09	120,734 09
Do. Packerton for rail	51 17	3,967 10	4,019 07
At M Chunk for canal		97,546 03	97,546 03
Total Anthracite	44,099 10	2,013,647 17	2,057,747 03
Bituminous Coal		11,883 00	11,883 00
Total all kinds	44,099 10	2,025,530 13	2,069,630 03

NOTE.—The Bituminous Coal entered above includes all carried by the L. V. R. R. Co., from Dec. 1st, 1868, to Aug. 31st, 1869, and will hereafter be reported monthly.

Lehigh and Susquehanna Railroad.

Report of Coal Shipped South for the week ending Oct. 30, 1869.

WHERE FROM	WEEK. Tons. Cwt.	TOTAL. Tons. Cwt.
Total Mauch Chunk Region	13,160 15	164,321 19
" Hazleton "	199 02	119,568 06
" Upper Lehigh "		77,193 12
" Wyoming "	20,043 12	660,291 19
Grand Total	33,403 13	1021,375 06
Corresponding week last year	35,116 07	823,836 17
Increase		197,538 09
Decrease	1,712 14	
Forwarded South from Mauch Chunk	32,408 11	675,367 07
Delivered on line of Lehigh & Sus'n R. R., above Mauch Chunk	812 08	28,344 08
Delivered to Lackawanna & Bloom. R. R., at Plymouth Bridge	182 14	16,836 19
Delivered to Lehigh Valley R. R. Co., at Sugar Notch		5,151 03
Delivered at Coal Port, for shipment by Canal		295,675 09
Total	33,403 13	1,021,375 06

Cumberland Coal Trade.

B. & O. RAILROAD.

The shipments over the Baltimore & Ohio Railroad for the week ending Oct. 30, 1869, were as follows:

From Cumberland & Pennsylvania R.R.	Tons.
Consolidation Co	2,083 16
Borden Co	2,113 11
Balt. & Hampshire Co	
Midlothian Co	111 33
Cooke Co	91 06
From Eckhart R. R.	
C. C. & I. Co	1,629 04
Total	6,029 00

BY C. & O. CANAL.

For the week ending Oct. 30, 1869, the shipments by the Chesapeake & Ohio Canal were as follows:

	Tons.
American Co	3,127 15
Borden Co	1,965 15
Central Co	2,572 07
Consolidation Co	2,608 01
C. C. & I. Co	1,607 04
George's Creek Co	796 08
Hamp. & Baltimore Co	965 05
Midlothian Co	830 16
Maryland	1,213 16
For private parties	3,709 10
Total for week	19,407 07

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

	AT NEW YORK, Nov. 5. R. A.	W. A.	AT PHILADELPHIA, Nov. 4. R. A.	W. A.
SCHUYLKILL.				
Lump	$— —	$7 00	— —	6 50 to — —
Steamer	— —	7 00	— —	6 50 to — —
Broken	— —	7 75	— —	6 50 to — —
Egg	— —	8 50	— —	7 00 to 7 50
Stove	8 50	9 00	— —	7 00 to 7 50
Chestnut	— —	7 00	— —	6 50
Pea	— —	— —	— —	— —
LEHIGH.				
Lump	— —	— —	— —	— —
Steamer	— —	— —	— —	— —
Broken	— —	— —	— —	— —
Egg	— —	— —	— —	— —
Stove	— —	— —	— —	— —
Chestnut	— —	— —	— —	— —
Pea	— —	— —	— —	— —
SPECIAL COALS.*	R. A.	9 50		
Diamond Vein	"	— —	— —	— —
New England	W. A.	9 00	— —	— —
Locust Dale	W. A.	8 00 to 8 50	— —	— —
Honey Brook, Le'h	" "	8 00 to 8 50	— —	— —
Spring Mount	" "	8 00 to 8 50	— —	— —
Sugar Creek	" "	8 00 to 8 50	— —	— —
Sugar Loaf	" "	8 00 to 8 50	— —	— —
Fulton	" "	8 00 to 8 50	— —	— —
Stout	" "	8 00 to 8 50	— —	— —
Old Comp'y's	" "	8 00 to 8 50	— —	— —
Cross Creek	" "	8 00 to 8 50	— —	— —
Chauncey	" "	— —	— —	— —
Girardville	" "	— —	— —	7 00 to 7 50
McMichael	" "	— —	— —	7 00 to 7 50
Duncan	" "	— —	— —	7 50 to 8 00
Shamokin	" "	7 50	7 50	— —
Lykens Valley	" "	— —	8 00	— —
Broad Top	" "	— —	5 25	— —
Hill & Harris	" "	— —	6 50	— —
Henry Clay	" "	— —	6 75	— —
Powelton	" R. A.	— —	7 50	— —
Burnside	" "	— —	8 00	8 00
Kittaning Coal Co.'s Phœnix Vein			f.o.b.	$5 50
" Lemon			"	5 25
Cumberland C. & I. Co.'s on board				7 25
Central C. & M. Co.'s "				7 25
Consolidated Coal Co.'s "				7 25

[*Dealers in these coals may be found in our advertising columns.]

Company Coals.

	L.	Str.	Gra.	Eg.	Sto.	Cst.
Scranton at E. Port	6 50	6 50	6 75	7 25	8 50	6 50
Pittston at Newb'g	6 40	6 40	7 00	7 50	8 25	6 60
Lackawanna at Rond't	6 50	6 75	7 00	7 25	8 25	6 75
Wilk'b're at Hoboken	— —	— —	— —	— —	— —	— —

For freights to different points, see "Freights."

Prices for Coal at Mauch Chunk.

	F.L.	Bro.	Gra.	Eg.	Sto.	Cst.
Lehigh	$4 25	$4 75	$4 75	$4 75	$5 00	$4 25
Wilkesbarre	4 25	4 75	4 75	4 75	5 00	4 25

For freight to Elizabethport and to New York see "Freights."

Prices of Foreign Coals.

November, 1869.
Duty $1 25 per ton.

Corrected weekly by PARMELE BROS., No 32 Pine street, New York.

Liverpool Gas Caking	$ 9 50@— —
" " Cannel	14 00@— —
" House "	17 50@18 00
" " Orrel	16 00@18 00

Per ton 2,240 lbs., ex-ship.

PRICES FROM YARD.

Liverpool House Orrel, screened	$16 00@18 00
" " Cannel "	17 00@20 00

Per ton 2,000 lbs., delivered.

Prices of Gas Coals.

November, 1869.

PROVINCIAL.

Duty, $1 25.	Coarse. Gold.	Slack. Gold.
Block House	$1 75 @— 75	
Gowrie	1 75 @— 75	
Lingan	1 75 @— 75	
Sydney	2 13½@— 71½	
Pictou	2 13½@1 18¾	
Little Glace Bay	1 50 @1 00	
Caledonia	1 00 @— 75	

AMERICAN.

	Coarse. Currency.	Slack. Currency.
Westmoreland Co	— — @— —	
Despard Coal Co	$8 50 @8 00	
Penn	— — @— —	
Newburg Orrel Gas	— — @— —	
West Fairmount Gas Coal	— — @8 00	

AT PHILADELPHIA.

Powelton	$7 80

Prices at Baltimore—OCT 1869.

Wholesale Prices to Trade.

Wilkesbarre, by cargo or car load	$7 50@8 00
Pittston and Plymouth	7 25@8 75
Shamokin Red or White Ash	6 50@7 00
Lykens Valley Red Ash	7 40@7 80
Trevorton, Red Ash	— —@— —
By retail, per ton of 2240 lbs. delivered	9 00@9 75
Georges Creek & Cumberland f. o. b. at Locust Point for shipping	4 85@5 00
West Fairmount Gas f. o. b.	— —@6 50

Prices at George't'n, D.C., & Alexandria, Va.

September, 1869.

George's Creek and Cumberland f. o. b. for shipping..$4 75

Prices at Havre de Grace, Md.

October, 1869.

Wilkesbarre and other White Ash for cargoes	$— —@7 25
Lykens Valley	— —@7 50
Shamokin Red or White Ash	— —@7 25
Trevorton and Zebra Valley	— —@7 00

Freights.—NOVEMBER, 1869.

TO EASTERN PORTS.	From Philada.	From E. Port and Port Johnston.	From Newburg.	From Railroad.
Stamford	$2 00	$1 15	$1 30	$1 25
Norwalk	2 00	1 15	1 30	— —
Bridgeport	2 00	1 15	1 30	1 25
New Haven	2 00	1 15	1 25	1 25
Hartford	2 75	1 75	— —	1 90
New London	2 00	1 40	1 60	1 65
Norwich	2 00	1 40	1 60	1 60
Mystic	2 00	— —	1 45	— —
Stonington	2 00	1 50	1 60	1 60
Sag Harbor	2 00	1 25	1 45	— —
Bristol	2 00	1 40	1 55	1 55
Newport	2 00	1 40	1 55	1 45
Fall River	2 00	1 45	1 55	1 50
Providence	2 00	1 40	1 60	1 60
Dighton	— —	— —	1 60	— —
Warren	— —	— —	1 60	— —
Pawtucket	2 00	— —	1 75	1 65
New Bedford	2 00	1 50	— —	1 75
East Cambridge	2 10	— —	1 85	2 10
Salem	2 50	2 00	2 20	2 50
Newburyport	2 50	2 00	1 85	2 25
Portsmouth	2 50	2 00	2 10	2 10
Rockport	— —	— —	1 90	— —
Saco	2 75	2 00	— —	2 00
Portland	2 50	2 00	2 20	— —
Bangor	2 50	— —	1 75	1 80
Bath	2 50	2 00	2 00	2 00
Middletown	— —	1 50	— —	— —
Amesbury	2 70	— —	— —	— —
Boston	2 50	2 00	2 25	2 25
Cambridgeport	2 50	— —	1 85	2 05
Taunton	2 50	2 00	1 85	— —
Derby	2 00	1 25	1 90	— —
New York	1 55	80	85	85
Hackensack	1 75	— —	— —	— —
Jersey City	1 65	80	85	85
TO RIVER PORTS.				
Troy	1 75	1 25	60	65
Albany	1 75	1 25	55	50
Coeyman's	1 60	— —	55	50
Stuyvesant	1 50	— —	50	45
Cocksackie	1 60	— —	45	45
Hudson	— —	80	40	50
Catskill	— —	— —	40	35
Poughkeepsie	1 60	75	30	25
Fishkill	1 60	— —	20	30
Cold Spring	1 60	70	30	50
Haverstraw	— —	50	45	55
Nyack	1 60	50	55	50
Sing Sing	1 60	— —	60	50
Yonkers	— —	40	60	55
New York	1 55	80	70	—
Saugerties	1 55	— —	35	30
Rhinebeck	1 60	— —	30	35
Rondout	1 60	60	30	25
Tarrytown	1 60	80	60	—
West Point	1 60	75	30	50

Rates of Transportation to Tide Water.

BY RAILROAD.

TO PORT RICHMOND, PHILADELPHIA.

Philadelphia and Reading Railroad, from Schuylkill Haven	$2 50

From Port Carbon, 8 cents per ton more.

TO ELIZABETHPORT.

L. V. Railroad from Mauch Chunk to Easton	$1 15
C. R. R., N. J., Easton to Elizabethport	1 70
Shipping expenses at Elizabethport	25
Total	$3 10

TO PORT JOHNSON.

L. V. R. R.	$1 15
C. R. R., of N. J.	1 80
Shipping expenses	25
Total	$3 20

TO HOBOKEN.

L. V. R. R.	$1 15
Morris & Essex R. R.	1 80
Shipping expenses	25
Total	$3 20

TO SOUTH AMBOY.

L. V. R. R.	$1 15
B. & D. R. R.	1 10
Cam. & Am. R. R.	50
Shipping Expenses	25
Total	$3 00

BY CANAL.

Via Schuylkill Canal.

TO PHILADELPHIA.

From Schuylkill Haven	$1 70
" Port Carbon	1 70
" Port Clinton	1 70

TO NEW YORK.

From Schuylkill Haven	$2 20

Via Lehigh Canal.

TO PHILADELPHIA.

Lehigh Canal	$1 14
Freight and towage	1 15
Total	$2 29

TO NEW YORK.

Lehigh Canal	$ 71
Morris "	85
Freight	1 70
Towing	10
Total	$3 36

TO JERSEY CITY.

Lehigh Canal	$ 71
Morris "	95
Freight	1 60
	3 26
For re-shipment	30
Total	$3 56

Via Delaware and Raritan Canal.

TO NEW YORK.

Lehigh Canal	$ 71
Delaware Division Canal	43
Delaware and Raritan Canal	57
Freight	1 45
Towage	20
Total	$3 36

TO NEW BRUNSWICK.

Lehigh Canal	$ 71
Delaware Division Canal	43
Delaware and Raritan Canal	57
Freight	1 20
Total	$2 91

For Re-shipment—30 extra for shipping, and 10 cents. drawback.

Foreign and Provincial Freights.

September, 1869.

Foreign.	
Newcastle and Ports on Tyne	£15@£18 keel
Liverpool	15s. 17s. to

TO NEW YORK.

Provincial.	
Sidney	$3 25
Lingan	3 25
Cow Bay	3 75
Port Caledonia	3 25
Little Glace Bay	3 25

TO BOSTON.

Sydney	$2 75
Lingan	3 75
Cow Bay	3 25
Port Caledonia	3 00
Little Glace Bay	2 25

Towing Rates.

TO EASTERN PORTS.

	Per Ton.
To New Haven	$ 40
Bridgeport	40
Southport	40
Westport	40
Norwalk	40
Stamford	40
	Per Boat.
Greenwich	$70 00
Port Chester	80 00
Mamaroneck	70 00
Glen Cove	55 00
New Rochelle	55 00
East Chester	60 00
West Chester	30 00
White Stone	30 00
College Point	25 00
West Farms	25 00
Flushing	30 00
Harlem and Mott Haven	20 00
Port Morris	20 00
Ninety-first street and Astoria	16 00

Boats beyond Port Chester, with less than 200 tons, $20 per Boat.

TO RIVER PORTS.

Boats of 150—250 Tons.	Per Ton.
To Manhattanville	9 cents.
Spuyten Duyvil	9 "
Yonkers	10 "
Hastings	12 "
Piermont	15 "
Dobbs' Ferry	15 "
Nyack	16 "
Tarrytown	17 "
Sing Sing	18 "
Croton Landing	19 "
Haverstraw	19 "
Verplanck's	20 "
Peekskill	20 "
West Point	21 "
Cold Spring	21 "
Newburgh	22 "
Poughkeepsie	22 "
Rondout	23 "
Boats of 100 Tons	Per Boat
To Manhattanville, and Return	$12 0
Spuyten Duyvil "	14 00
Yonkers "	15 00
Sing Sing "	25 00
Peekskill "	25 00

METALS.

IRON.—Duty: Bars, 1 to 1¼ cents ₱ lb; Railroad, 70 cents ₱ 100 lbs.; Boiler and Plate, 1½ cents ₱ lb; Sheet, Band, Hoop, and Scroll, 1¾ to 1¾ cents ₱ lb; Pig, 9 ₱ ton; Polished Sheet, 3 cents ₱ lb.

Pig, Scotch No. 1, ₱ ton	36 00@38 00
Pig, American, No. 1	40 00@41 00
Pig, American, No. 2	37 —@38 —
Pig, American, Forge	36 —@— —
Bar, Refined, English and American	85 —@— —
Bar, Swedes, assorted sizes (gold)	82 50@85 00
	Store Prices.
Bar, Swedes, ord'y sizes, less 5 ₱ ct.	— —@140 —
Bar, Refined	95 —@100 —
Bar, Common	87 50@ 90 —
Scroll	120 —@130 —
Ovals and half-round	120 —@145 —
Band	120 —@— —
Horse Shoe	120 —@— —
Rods, ⅜ to 3-16 inch	100 —@155 —
Hoop	125 —@130 —
Nail rod, less 5 ₱ ct.	— 8¼@— 9½
Sheet, Russia, as to Nos. (gold)	— 11 @—12
Sheet, Single, D, and T. Common	— 6½@— 7
Sheet, Galvanized	List 15@25 ₱ cent. discount.
Rails, English (gold), ₱ ton	57 00 @— —
Rails, American, at Works in Pa.	— —@77 00

STEEL.—Duty: Bars and ingots, valued at 7 cents ₱ lb or under, 2½ cents; over 7 cents and not above 11, 3 cents ₱ lb; over 11 cents, 2½ cents ₱ lb, and 10 ₱ cent ad val. (Store prices.)

English Cast (2d and 1st quality) ₱ lb	— 18 @— 22
English Spring (2d and 1st quality)	— 9 @— 11½
English Blister (2d and 1st quality)	— 11½@— 13
English Machinery	— 12½@— 15
English German (2d and 1st quality)	— 14 @— 16
American Blister "Black Diamond"	— 10½@— 16
American, Cast, Tool do.	— 19 @— —
American, Spring, do.	— 10 @— 13
American Machinery, do.	— — @— 13
American German, do.	— 10 @— 13

COPPER.—Duty: Pig, Bar, and Ingot, 5; old Copper cents ₱ lb; Manufactured, 45 per cent. ad val.

	All Cash.
Copper, New Sheathing, ₱ lb	— @— 32
Copper Bolts	— @— 33
Copper Braziers, 16oz. and over	33 @— 35
Copper Nails	38 @— 40
Copper, Old Sheathing, &c., clean	20 @— 21
Copper, Chili Pig	— @— —
Copper, American Ingot	22½@— 22½
Yellow Metal, New Sheating	— @— 27
Yellow Metal Bolts	— @— 27
Yellow Metal Nails	— @— 27

LEAD.—Duty: Pig, $2 ₱ 100 lbs.; old Lead, 1½ cents ₱ lb; Pipe and Sheet, 2¼ cents ₱ lb.

Galena, ₱ 100 lbs.	$— — @— —
Spanish (gold)	6 42½@6 50
German, do.	6 42½@6 55
English, do.	6 42½@6 87½
Bar (net)	8 62½@8 75
Pipe and Sheet (net)	8 62½@8 75

TIN.—Duty: Pig, Bars, and Blocks, 15 ₱ cent. ad val.; Plate and Sheets and Terne Plates, 25 ₱ cent. ad val.

	Gold ₱ lb.
Banca	38 @38½
Straits	33 @33½
English	31½@32

PLATES.

Fair to Good Brands.	*Gold.*	*Currency.*	
I. C. Charcoal, ₱ box	$8 37½@8 50	$11 25	@11 75
I. C. Coke	6 75 @7 37½	9 00	@10 25
Coke, Terne	— — @6 00	— —	@ 8 50
Charcoal Terne	7 75 @8 25	10 50	@11 25

SPELTER.—Duty: In Pigs, Bars, and Plates, $1 50 ₱ 100 lb.

	Gold.	
Plates, Foreign ₱ 100 lbs.	$6 12½@6 25	
Plates, Domestic ₱ lb.	9 @— 12	

REMARKS.

IRON.—The market for Scotch Pig remains quiet, and, as the arrivals continue liberal, prices are still unsettled. We notice sales of 300 tons Eglinton, part at $36, and 100 tons do. Glengarnock $37 cash, and $37.25 90 days. American meets with but little inquiry, and prices are unchanged; we quote No. 1 $40, and No. 2 $37 @ $38. The sales are 115 tons No. 1 Allentown, part at $40.50, and 200 do. Manhattan Gray Forge, $36.50. Wrought Scrap remains quiet; we have only to notice a sale of 200 tons at $40. New Rails are in good demand at $57, gold, for English, and $77, currency, for American, at the works in Pennsylvania. We notice the sale of 5,000

tons American, at the works, on private terms. Bar from store continues dull at former quotations. Sheet very quiet.

STEEL—Continues steady and quiet at our quotations for lots from store.

COPPER—Is quiet at 22¼c. for cash lots; 22½c. for December, and 22⅜c. for January, all kinds.

TIN.—Stock in New York and Boston, November 1st, in first hands:

Straits	2,500 slabs.
Billeton	3,900 "
Banca	none.
English	"
Total	6,400 "
Against " 1868	10,825 "

To arrive from Singapore, latest advices—

November 1st, 1869	10,000
" " 1868	13,607

About 500 slabs Banca and 400 tons English were in stock November 1, 1869, but all in dealers' hands.

Banca is held, November 4th, at	38¼	gold.
Billeton " "	35½	"
English " "	32	"
Straits " "	33½	"

and market very firm.

LEAD—Is firm at $6.45 @ $6.50, gold, for ordinary foreign.

ANTIMONY—12½c. @ 12¾c., gold.

SPELTER—6¼c. @ 6¾c., gold, and quiet.

ZINC.—American, dry, 7c. @ 7½c.; French, dry, 11¼c. @ 11½c.; French, metallic, 12c. Duty 2½ cts. per lb.

MANGANESE—5c. per lb.

Mining Stocks.

NEW YORK, NOV. 4, 1869.

The sales at the Mining Board to-day were confined to Gregory, $1.35, and Quartz Hill, 53, $1.15—prices considerably below last week's figures. A glance through our list, printed elsewhere, shows a general decline in prices.

The following are the latest quotations for Petroleum stocks, which in some instances are considerably advanced:

	Bid.	Asked
Clinton Oil	2 25	—
Brevoort	1 50	2 00
Buchanan Farm	—	50
Home Petroleum	7 00	10 00
Central	74	75
New York and Alleghany	90	1 75
National	—	2 00
United States	70	71
Northern Light	60	1 00
United Petroleum Farms	14	20
Rynd Farm	29	35
Pithole Creek	1 55	1 75
Bergen Coal and Oil	16	—
Rathbone Oil	20	—
Union	15 00	16 00
Second National	20	—

San Francisco Stock Market.

SAN FRANCISCO, November 3, 1869.

	1st Board.	2d Board.
Savage	50	49½
Crown Point	11⅞	
Yellow Jacket	46	47
Kentucky	1 70	—
Chollar Potosi	20¼	—
Gould & Curry	79	—
Ophir	15¼	19
Alpha	15½	17½
Belcher	14⅝	—
Imperial	44	—
Hale & Norcross	1 51	—

ASSESSMENT.—Belcher Mining Company; $2 50 coin per share. Delinquent Nov. 22d; sale Dec. 11th, 1869.

Statement of Business at the United States Assay Office,

At New York, for the month ending October 30, 1869:

Deposits of Gold		$615,000 00
Foreign Coins	$14,000 00	
Foreign Bullion	16,000 00	
United States Bullion	585,000 00	
Deposits of Silver, including purchases		$195,000 00
Foreign Coins	$102,000 00	
Foreign Bullion	15,000 00	
United States Bullion, (contained in Gold.)	8,000 00	
(Colorado)	14,000 00	
(Lake Superior)	2,000 00	
(Nevada)	54,000 00	
Total Deposits: Payable in Bars	400,000 00	
" " Payable in Coins	410,600 00	
Total Deposits		$810,000 00
Transmitted to the United States Mint, Philadelphia, for Coinage		$182,598 87

The total deposit of bullion since the commencement of the present year is as follows:

JULY.		
Gold	$1,005,000	
Silver	85,000—	$1,090,000
AUGUST.		
Gold	$500,000	
Silver	91,000—	$591,000
SEPTEMBER.		
Gold	$1,400,000	
Silver	350,000—	$1,750,600
OCTOBER.		
Gold	$615,000	
Silver	195,000—	$810,000
Total		$4,241,000

Lehigh Valley Slate Shipments.

THE following is a weekly statement of roofing and school slates, and mantles, shipped from Slatington, via the Lehigh Valley and Lehigh and Susquehanna Railroads, for the week ending Oct. 27:

ROOFING SLATES.	Squares.
Keystone Slate Company	120
Jones & Town	120
D. Williams	120
H. Williams	240
D. Thomas	80
McDowell Slate Company	40
Locke Slate Company	40
Lehigh Slate Company	100
Saylor & Morgan	40
H. I. Hankee	10
Total	910
SCHOOL SLATES.	Cases.
Locke Slate Company	80
D. Williams	25
Total	105
MANTLES.	Cases.
Lehigh Slate Company	40
Yerks & Martin	70
BLACKBOARDS.	
Lehigh Slate Company	10

—*Slatington News.*

The Tin-Plate Trade.

THE London *Colliery Guardian* says: "The position of this important branch of trade has been exceedingly unsatisfactory for some time past, the demand having fallen off to a great extent, and the prices realized are quite unremunerative. Last year, and for the first three or four months of the present year, such an enormous quantity of plates was exported to the United States that the market there became quite glutted, and the result was that plates were selling at New York at lower prices than at Liverpool. As might be naturally expected, the extreme depression has brought about heavy failures in the trade, which have necessitated the stoppage of several works, and it is generally agreed that there must be a reduction of make at all the tin-plate establishments before stocks can be sufficiently reduced to command higher quotations. The Abertillery works, which have been at a standstill in consequence of the failure of the late proprietor, have been sold within a few days at less than one-half the purchase money thirteen years ago, which is a proof of the unfavorable position of the trade just at present. There are strong hopes, however, that, with the reduced make and increased American purchases, the next spring will witness some degree of revival in the demand."

Improvement in Fire Arms.

THE ETHAN ALLEN ARMS COMPANY, of Worcester, Mass., manufacture every variety of small arms, and a breech-loading rifle in laminated and twist patterns, which is attracting the attention of the trade and of the sporting public. This rifle loads with steel shells, as would an ordinary muzzle-loading gun, using a wad one size larger than the bore of the shell; opening the lid of the gun and inserting the cartridge makes it ready to cock and fire. After discharging, the lid can be opened, the guard dropped, and the shell withdrawn. The wad-driver or loader is also used to force out the primer from the shells, by first turning the ferrule on the loader to the left, then sliding forward, then turning to the left again, and then forcing out the primer. Turning off the knob to the loader gives a worm for drawing charges. The stock can be detached from the barrel by opening the lid and removing the guard and the large screw in front of the guard. The barrels slide off laterally. Care should be taken to keep the cartridges well oiled, and the gun cleaned after shooting. A soft felt wad put upon the charge and well saturated with oil, and occasionally shot from the gun, effectively cleans the barrels.

Truesdell's Iron Truss Bridge.

As the advertisement elsewhere particularizes, the bridge of the TRUESDELL patent, made in Springfield, Mass., by A. D. BRIGGS & Co., are in extensive use in New England. The solidity of these structures is noticed the moment they are driven upon—not even a tremble being felt; and the proprietors claim for them superiority over all others, in that, by the peculiar method of construction, the whole strength of the materials in the braces is retained, none of it being cut away for rivets or bolts; therefore a much less amount of material is required to sustain a given load than in any other bridge, and the strains are more equally distributed throughout the whole structure.

The Disaster on the Mississippi.

OUR readers are already familiar with the details of this terrible catastrophe. The destruction to life and praperty was fearful; but the moral to be drawn from this is the necessity for supervision, as, according to the engineer's statement, the accident arose from the most wilful carelessness. The ship was laden with hay, and yet, some passengers playing at cards, by the aid of a naked light, were the cause of the destruction which followed.

Another Fire at the Coal Mines.

THE telegraph brings intelligence of a disastrous fire which occurred on the evening of the 27th ult., destroying the breaker of the Upper Lehigh Coal Company, situated about seven miles from White Haven. Labor on the works had been stopped for several days, with the exception of pumping, and the belief is expressed that the fire was the work of an incendiary. The property is insured for $30,000.

ALTHOUGH the Prussian Government insists on all precautions which science discovered for the protection of miners, 293 men lost their lives in the collieries of that country in 1867. The proportion was 2.84 for every 1,000 men employed. In England the rate is even higher 3.57 per 1,000).

MINING COMPANIES AND STOCK QUOTATIONS.

GOLD AND SILVER COMPANIES.	SITUATION OF MINE.	SECRETARY AND PLACE OF BUSINESS.	CAPITAL.	PAR VALUE.	OFF'R'D.	ASKED.
Alameda Silver		A. Queran, 108 Wall st	$2,000,000	$10 00		
Ada Elmore	South Boise, Idaho					
American Flag	Nevada District, Col	P. P. Fullerton, 71 B'way	600,000	10 00		
Atlantic and Pacific	Humboldt Co., Nevada					
Bates and Baxter	Colorado			50 00		
Benton	Colorado	W. F. Drake, 15 Broad	500,000	5 00		
Briggs	Colorado	J. P. Davies, 19 Cliff	1,000,000	100 00		
Black Hawk	Colorado	C.T.Whittington, 48 Broad	2,500,000	100 00		28
Gobtail	Colorado	J. Stanton, Jr., 25 Nassau	1,000,000			
Bullion Consolid'ed Gold	Colorado					
Burroughs Gold	Colorado					
Church Union Gold	California					
Consolidated Gregory	Colorado					
Combination Silver	Nevada			100 00	1 50	
Columbia Silver	Austin, Nevada	J. M. Brown, 155 B'way	5,000,000			
Commercial Silver		J. E. Smith, 26 Pine	3,000,000			
Corydon	Gilpin Co., Colorado	J. Samuels, 40 B'way	500,000			
Downieville	Colorado		2,500,000	25 00		
Eagle Gold	Gold Dirt Dist., Col	J. P. Davies, 19 Cliff	300,000	1 00		
Empire Gold and Silver	Bodie Bluff, Mono Co. Cal	H. K. Gates, 70 B'way	1,000,000			
Edgehill		A. Fullerton, 71 B'way	10,000,000			
Esperanza Silver		Ezra Clark, Jr., 13 William	400,000			
Fisk Gold		H. Johnson, 195 Fulton	500,000			
Forest Queen		E. B. Beet, 62 B'way	1,000,000			
Golconda Gold	Sherbrooke, C. E.	H. Adams, 71 Broadway	2,000,000			
Gregory	Colorado		1,250,000			
Gunnell Gold	Colorado	J. H. Rolston, 80 B'way	1,000,000	50 00		
Gunnell Central	Colorado	C. B. Bostwick, 16 B'way	3,000,000	10 00		
Gold Rock		R. M. Lockwood, 93 Wall	400,000			
Grass Valley					25	30
International Silver		J. W. Brazier, 26 Pine	600,000			
Hope Gold	Colorado		5,000,000			
Holman			2,000,000	25 00		
Kipp & Buell	Colorado		300,000			
Knickerbocker Gold		J. H. Rolston, 80 B'way	200,000	100 00		
La Crosse Gold	Nevada Dist., Col	P. P. Fullerton, 71 B'way	1,000,000		8	12
Lander Hill T. & S	Nevada	M.L.Catherwood,74 B'way	1,000,000			
Lewis Gold	Georgia		1,000,000			
Liberty Gold						
Manhattan Silver	Nevada	M. L. Ogden	400,000			50 00
Maraposa common	California	Jas. H. Ferdon, 34 Wall	12,000,000		8	8⅛
Mariposa preferred	California	do. do.			15½	15½
Montana Gold		G. De Cordova	400,000		3	
Montana M. L. & M. Co.	Montana	A. M. Hoyt, 22 William	250,000			
Montrose	Clear Creek Co., Cal	W. W. Perkins, 71 B'way	1,000,000			
New York Silver	Nevada	Thos. Sproull, 78 B'way	1,500,000			
New York and Austin	Nevada	E. R. Siccomb, 70 Wall	500,000			
New York and Owyhee	Owyhee Co., Idaho		1,000,000			
New York and Eldorado		G. H. Munroe, 10 Wall	2,000,000			
N. Y. & Montana M. & D.	Montana	F. A. Chapman, 20 Nassau	1,250,000			
N. Y. & Silver Peach	Nevada	R. C. Root, 74 B'way	2,000,000			
N. Y. & Utah P. & M		W. H. Mailler, 108 Wall				
Ophir Gold	Comstock Lode, Nev	L. C. Warner, 70 B'way	625,000			
Owyhee Gold		W. H. Smith, 43 Ex. Place	1,700,000			20 00
Pahranagat Central	Nevada	J. E. Smith, 25 Pine	6,000,000			
Quartz Hill Gold		F. Bernard	2,500,000		1 15	1 20
Reese River Consol'd	Nevada	W. B. Ogden	6,000,000			
Rocky Mountain	Colorado	S. M. Pond, 70 B'way	500,000	10 00		
Rollins Gold		Thos. Bond, 132 B'way	600,000			
Sensenderfer	Colorado	H. A. Shewill, 19 Broad	1,000,000			
Silver Bend		F. W. Macy, 20 Nassau	1,500,000			
Silver Mt. Silver		H. A. Moen, 71 B'way	1,000,000			
Silver Peak & R. M	Nevada	W. B. Ogden, 52 Wall	5,000,000			
Smith & Parmelee	Colorado	W. H. Hollister, 6 Broad	2,500,000	20 00	1 65	1 85
Social & Steptoe Con		T. H. O'Connor, 24 Nassau	450,000			
Standard Gold		C. B. Bostwick, 169 B'way	500,000			
Symonds Forks					35	50
Twin River Silver	Nevada	J. F. R. Hadden, 20 Nassau	800,000	100 00		
Texas Gold	Colorado		500,000	10 00		
Union Gold	Colorado	F. A. Potts, 110 B'way	1,200,000			
Wash. Mill & Silver	Nevada	W. W. Perkins, 71 B'way	300,000			
Wauba Yuma	Arizona	J. W. Silsby, 36 Pine	6,000,000			

COAL AND IRON COMPANIES.	SITUATION OF MINE.	SECRETARY AND PLACE OF BUSINESS.	CAPITAL.	PAR VALUE.	OFF'R'D.	ASKED.
American Coal Co		M. A. Myers, 119 B'way	$1,500,000	$25 00		
Ashburton Coal Co		J. T. Rollins, 41 Pine	2,500,000			
Block House Coal		D. B. Keeler, Jr., 43 Pine	1,000,000			
Brewster Iron		H. Robison, 165 B'way	150,000			
Broad Top Coal & Iron Co	Pennsylvania	B. Love	2,000,000			
Cameron Coal Co		J. A. Simpson, 40 B'way	2,500,000			
Carbon Hill Coal Co		J. Silsby, 36 Pine	1,000,000			
Central Coal		F. P. White, 111 B'way	2,000,000	100 00		
Clifton Iron Co		P. H. Riordan, 34 Pine	1,250,000			
Columbia Iron		F. D. Webb, 77 Cedar	1,000,000			
Consolidation Coal	Maryland	J. S. Mackie, 71 B'way	5,000,000			
Crawford Coal		E. Clapp, Prest, 137 B'way	1,000,000			
Cumberland C. & I. Co		E. Kisean, 90 B'way	5,000,000		28	28½
Derby Coal Co		W. S. Davison, 11 Broad				
Dover Coal and Iron Co		L. Chase, 88 Wall				
Del. & Hudson Canal Co			10,000,000	100 00		
Ebervale Coal		G.L Stout, Treas., 111 Br'y	500,000			
Fall River Bituminous		D. T. Blauvelt, 43 Pine	1,000,000			
Farrar Coal		C. H. Jones, 43 Pine	250,000			
Fisher Iron Co		M. Ellis, 19 William	100,000			
Hamp're & Balt. Coal		S. M. Pond, 70 B'way	500,000			
Iron Cliffs Co		C. J. Canda, 52 Wall	1,000,000			
Jackson Iron		G. P. Loyd, 119 B'way	300,000			
Kemble Coal & I. Co		R. A. Wight, 26 Ex. Place	300,000			
Keokuk Coal		J. F. Franklin, 112 B'way	100,000			
Lackawanna I. & C	Pennsylvania	E. C. Lynde, 52 Wall	1,200,000			
Lewis Run C. & I. Co		C. A. Sanborn, 80 B'way	750,000			
Lykens Val. Coal Co		F. A. Platt, 13 William	800,000			
McKean Co. Bit. Coal Co		J. H. Rolston, 80 B'way	1,500,000			
Lehigh & Susquehanna						
Mahanoy			400,000	100 00		
McNeal C. & I. Co		C. C. Godwin, 71 B'way	500,000			
Mount Riga Iron		G. M. Newton, 42 Cedar	300,000			
New Boston Coal		C. H. Ogden, 55 B'way	2,000,000			
N. Y. Con. C. & I. Co		A. T. Levine, 16 Wall				
N. Y. & Lehigh Coal		T. Simpson, 111 B'way	150,000			
Pacific Coal Co		G. Wrighton, 34 Wall				
Peekskill Iron Co		W. Murdock, 7 Nassau				
Pennsylvania Coal Co		C. H. Mead, 111 B'way	3,200,000	50 00		
Richmond Iron Co		C. H. Smith, 165 B'way	1,000,000			
Scotia Coal Co		I. N. Soper, 42 B'way	2,500,000			
Spring Mt. Coal		C. Runyon, 111 B'way	1,250,000			
Springfield & D'p Run C		E. D. Webb, 77 Cedar	600,000			
Stout Coal Co		G. S. Comstock, 111 B'way	500,000			
Susquehanna & Wyoming		E. Potter, 40 B'way	1,000,000			
Tannerdale Coal		I. T. Ludlaw, 71 B'way	250,000			
Wash. Mutual Coal		M. C. Baker, 117 B'way	420,000			
West Point Iron Co		R. C. Brock, 110 B'way	500,000			
Wilkesbarre C. & I. Co		W. H. Tillinghast, 80 Br'y	3,400,000			
Wyoming Val. Coal Co		E. Potter, 40 B'way	1,000,000			

COPPER AND LEAD COMPANIES.	SITUATION OF MINE.	SECRETARY AND PLACE OF BUSINESS.	CAPITAL.	PAR VALUE.	OFF'R'D.	ASKED.
Anita Copper	California	J. A. Ferguson, 8 Wall				
Corinth Copper	Corinth, Vermont	S. H. Howard, 191 B'way	$500,000	25 00		
Davidson Copper					3	
Eagle Harbor Copper	Michigan	W. H. Smith, 43 Ex. Place	500,000	25 00		
Evergreen Bluff Copoer	Michigan	F. W. Caper, 44 Ex. Place	500,000	25 00		
Globe Copper		R. K. Rickard, 19 Nassau	200,000			
Grand Portage Copper Co		A. S. Kellogg, 22 Pine	500,000			
Guymard Lead		Samuel Vernor, 38 Pine				
Hilton Copper		W. H. Smith, 43 Ex. Place	500,000			
Hope Copper		J. W. Davis, 19 Nassau	500,000			
Hudson River Copper	New York	T. Clarkson, 22 William	1,500,000			
Indiana Copper Co		J. M. Mills, 25 Nassau	500,000			
Isle Royale Copper	Michigan	F. W. Caper, 44 Ex. Place	1,000,000			
Keweenaw Copper	Michigan	F. W. Caper, 44 Ex. Place	500,000			
Lake Superi'r Silver Lead	Michigan	A. S. Kellogg, 22 Pine	1,000,000			
Omiga Copper	Michigan	S. Cooper, 7 Pine	500,000			
Ridge Copper	Michigan	J. L. Gardiner, Jr., 43 Ex. P	500,000			
Rockland Copper	Michigan	A. Fullerton, 71 B'way	500,000			
St. Joseph Lead	Michigan	J. W. Jones, 6 Broad st	1,000,000			
St. Marguret Copper		E. P. Sutton, 43 Pine	250,000			
Schoolcraft Copper		R. Walsh, 22 William	500,000			
Superior Copper	Michigan	A. Fullerton, 71 B'way	500,000			
Union Copper		A. S. Kellogg, 22 Pine	500,000			
Vermont Copper	Vermont	J. C. Ely, 191 B'way	500,000			
Wallkill Lead, ass'td		S. M. Pond, 70 B'way			6	

MISCELLANEOUS.	SITUATION OF MINE.	SECRETARY AND PLACE OF BUSINESS.	CAPITAL.	PAR VALUE.	OFF'R'D.	ASKED.
American Zinc Co		W. E. Lawton, 19 Cliff	$1,000,000			
Bigelow Blue Stone Co		H. Bogardus, 14 Pine				
Quicksilver					15¼	15⅜
Covill B. L. M. & M'f. Co		C. R. Bostwick, 302 Pearl	250,000			
Manhattan Marble		H. K. Gates, 70 B'way	300,000			
N. Jersey Zinc Co	New Jersey	A. H. Farlin, 61 Maiden L'e	1,500,000			

Wooden Railways—Foster's System.

MR. CHARLES LEGGE, civil engineer, and a provisional director of the Montreal Colonization Railway, in his report on the Hochelaga and St. Jerome section of the road, remarks on wooden rails as follows:

"MR. HURLBERT states that the track, or permanent way on the Clifton (New York State) road, cost $1,500, gold, per mile. Mr. FOSTER, the inventor of the new style of superstructure, will be prepared to lay it down on the road complete, ready for the rolling plant, say for engines of twenty tons, running at the rate of eighteen miles per hour, at $1,760 per mile, or one dollar per yard. Two serious objections, in my opinion, exist to the Clifton system of wooden track, and are as follows; First—The rails are laid longitudinally, exposing the fibre of the timber, in the weakest condition to the traction, causing it to crush, or 'broom up.' The joints in the rails occurring at short intervals of twelve or fourteen feet, without assistance of the chairs or fish-plates of the ordinary iron rail, cause an uneven surface to the road. The engines and rolling stock, in passing over the line, at each inequality impinge on the rails to a greater extent than if they were uniform and continuous, and thus increase the destroying agencies; while at the same time acting prejudicially on the rolling stock itself.' These two leading objections have been surmounted in the 'Foster system.' It is a well-known fact that the fibre of timber, when placed endways, is capable of resisting a much greater amount of strain, or wear and tear, than if exposed horizontally to the same force; wooden steps for supporting the shafts of water-wheels, being cases in point, are used in preference to metal bearings, and last for many years.

"The improved arrangement for enabling the wood to perform its greatest service, will be briefly described: Short blocks of hard wood, 3½ inches thick and 7 inches long, are placed between two longitudinal pieces of pine, each 8 by 4½ inches, and of convenient length. These pieces having been checked out on their inner sides, about 5 inches by 1 inch, for the reception of the blocks, which rest at their lower ends on the shoulders of the checks, with two inches bearing, and projecting three inches above the longitudinals; oak pins of 1 inch diameter are driven through the side pieces at each joint of the blocks—the longitudinals break joints with each other, and are secured together at these points with iron bolts. The longitudinals and blocks form the rails, and are held in gauge with each other at intervals of 10 or 12 feet, by being dropped into notches or cut in cross-ties, and held firmly in place by double wedges driven between the side of the notch and the longitudinal timbers, the whole being bedded firmly in the ballast, which is brought to the upper side of the longitudinals, leaving only three inches in length of the upper ends of the blocks exposed to view, and resembling two continuous parallel lines of rails. A short section of track on this system has been in use on the Industry and Rawdon Railway as an experiment, since the commencement of the season. Some two months after it was placed, the writer examined its condition, and found no appearance of wear. The superintendent of the line now reports that the material has undergone no change since the day it was put down. The ordinary wear and tear of traffic having no practical effect on the material when arranged in this form, the only point to guard against is the natural decay of the timber. This could be very materially prevented by giving the exposed surface a coating of coal-tar, asphaltum, or other antiseptic, say the second season after the track is down, and when the timber has become thoroughly seasoned. These preparations will close up all the pores, seams or cheeks, and render them impervious to water; the sand and dust from the ballast will also become incorporated with the tar or other substance, and be forced into the upper surface of the blocks, and increase the traction power. Treated in this manner, in my opinion, *a wooden railway will last longer in this climate than an iron road*, and can be constructed for about one-fourth of the expense, with the additional advantage that the country furnishes all the material and labor in the wooden road, while in the iron one an amount of money equal to at least three times the cost of the wooden track is sent out of the country, simply to purchase the iron."

Peat in Iron Metallurgy.

OSBORN'S new work on Iron and Steel contains some excellent observations concerning the use of peat as a metallurgical fuel. The whole chapter on fuel is interesting and valuable. With regard to peat, Professor OSBORN remarks: This fuel, on account of its chemical composition, is not without interest to iron-workers, because the question has been of late years considerably agitated as to the use of peat in iron operations. It has been found that peat is a most excellent fuel for the blacksmith's forge, as in case-hardening, tempering, and hardening steel, forging horseshoes, and particularly in welding gun-barrels. For this purpose, it is pressed and charred. Peat is generally found in bogs, in horizontal layers, from ten to thirty feet in thickness, sometimes in the form of a blackish-brown mud; sometimes it is a dark peaty mass, and often a combination of roots and stalks of plants; frequently the peat layers interchange with layers of sand or clay. Sea-water is better adapted to the formation of peat than rain or spring water. Peat is simply dug with spades, and then dried. If too moist to be dug, the half-fluid mass is piled upon a dry spot, and there left until the water drains, and the mass appears dry enough to be made into square lumps, in the form of bricks or rolls. In many instances, however, the freshly dug peat is triturated under revolving edge-wheels, faced with iron plates, perforated all over their surface; through the apertures in these plates the peat is pressed till it becomes a kind of pap. This pap is put into a hydraulic press, and squeezed until it loses the greater part of its moisture. It is then dried and charred in suitable ovens. The charcoal made in this way deserves the notice of the artisan. The amount of ashes in peat varies greatly, and, economically considered, is of considerable importance. Some specimens contain only one per cent., whilst others contain thirty per cent., which in direct proportion diminishes the value of the peat. But it is not so much the quantity as the quality of these ashes which interests us. Their value as fuel to the blacksmith is indicated by their chemical composition. It is a remarkable fact that in peat ashes we never find any carbonated minerals, while they contain phosphates, sulphates, and chlorides. An analysis of peat ashes gave, in 100 parts—lime, 15·25; alumina, 20·5; oxide of iron, 5·5; silex, 41·0; phosphate of lime, 15·0; chloride of sodium, 15·5; and sulphate of lime, 21·0. In other kinds of peat thirty-four per cent. of phosphate of lime, and six per cent. of chlorides were found. The phosphates and chlorides have an excellent influence on the hardening and welding of iron and steel, and if we use peat for these purposes we should analytically investigate the ashes which it produces.

Though the elements of peat ashes are beneficial to the working of bar iron and steel, it does not follow that they are equally beneficial in reducing iron ore; for in the blast furnace phosphates of any kind are injurious, and produce a cold-short iron. Therefore, we should be very cautious when we recommend peat for the blast furnace. We should recommend only such kinds of peat as contain neither too many phosphates nor too great an amount of ashes; otherwise we run risk of producing bad work in the furnace. Dug peat that is applicable for the smelting of iron should never contain more than five per cent. of ashes. The component parts of peat differ from those of wood; according to the following analyses, one hundred parts of good peat contained, besides ashes:

	Carbon.	Hydrogen.	Oxygen.
No. 1	57·03	5·63	31·76
No. 2	58·09	6·93	31·37
No. 3	57·79	6·11	30·77

We find here less oxygen but more combustible matter than wood; it is a very imperfect fuel, because it generally contains too much foreign matter, and it is too expensive where wages are high. A great deal of it is used in different parts of Europe, where cheap labor and scarcity of wood and stone coal render it more available, but where wood and coal can be had at reasonable prices there is not much prospect of peat coming into use for the manufacture of iron. Still it is unquestionably useful in working steel and bar iron. In such cases, however, it should be subjected to a chemical analysis. Peat should never be used in its raw form, but only when charred. Where its composition is shown to be favorable by chemical analysis, we need not be harassed in relation to its price, for its utility is so obvious that a liberal expenditure may be safely hazarded. The expense of peat in comparison with that of wood or wood charcoal, may be estimated by weight. The specific gravity of a cord of dry wood is from 2000 to 3000 pounds, and if we consider that air-dried wood contains from thirty to forty per cent. of water, the real amount of combustible matter in a cord is reduced to from 1300 to 2000 pounds. Air dried peat always contains more or less water, and this is to be deducted before we can know its real value. The amount of water varies exceedingly, ranging from ten to forty per cent. It can be easily estimated by weighing the peat when fresh, then exposing it to a heat of 212°, and again weighing it—the difference is water. According to this, a ton of air-dried peat ought to be worth as much as a cord of wood, provided the quantity of ashes in the peat is not too great—say, ten per cent. This quantity can be found by weighing a piece of peat, and burning it slowly on a plate of sheet iron until all the carbon is expelled. This operation requires a red heat. The remainder is ashes. If peat is dug for the purpose of charring, it is advisable to employ a good strong peat press. Peat thus pressed chars excellently, and yields a charcoal as hard again as the best sugar maple or hickory coal.

Semi-Bituminous Coal.

THERE has been much speculation of late regarding the causes affecting the prices of anthracite coal. The recent fluctuations have been attributed by some to the rapacity of the operators, by others to the combinations of the employés, while the collusion of both with the transporting companies has been openly asserted by many.

That the high prices were occasioned by some artificial or unnatural means cannot be gainsaid, yet it is not our present intention to discuss the relative importance of the causes mentioned. We prefer to call the attention of our readers to a remedy that will effectually resist the alleged machinations of operators, and prevent any unnecessary inflation of the price of anthracite coal.

Unless a substitute can be found that will satisfactorily take the place of anthracite in large manufacturing establishments for iron-making, and for the generation of steam, etc., it would be hopeless to prevent the yearly recurrence of the past summer's experience, for the simple reason that the area of the chief anthracite fields is limited, necessarily bringing into close contact the operatives connected with a majority of the collieries. These persons, by means of their associations, can regulate the supply of coal, adjust their own wages, in short, determine prices at the mines. Then there are several powerful mining and transportation companies that absolutely control the coal production from their respective localities, rendering individual competition from those regions impracticable; and these corporations determine the increased price in the market, as compared with the price at the mines. The withdrawal by Congress of the import duty on coal has been urgently advocated by influential journals, as a counteracting influence. What effect can the abolition of a tariff have on anthracite, when no important deposit of this mineral has been discovered outside of the State of Pennsylvania? The fallacy is too apparent to admit of argument.

What we want is competition from another locality, from a region where the combinations of miners and the influence of Schuylkill, Lehigh, and Luzerne counties would be powerless, where the price of a staple commodity could be regulated by the legitimate rules of supply and demand. This competition can be found in the semi-bituminous coal of Pennsylvania and Maryland.

This coal underlies the greater portion of the western half of Pennsylvania, being accessible at many points in inexhaustible supply. It is found for a distance of 50 miles along the Philadelphia and Erie railroad; on the Pennsylvania railroad, crossing the Alleghanies; in great quantities on the Huntingdon and Broad Top railroad, and upon the Tyrone and Clearfield railroad. We shall refer more particularly to the operations along the two latter roads, this coal being superior in quality, and the mines more extensively developed.

The Huntingdon and Broadtop railroad intersects the Central at Huntingdon, and opens a market for the production of about 20 collieries, having an average capacity of 2500 tons per diem. The coal is developed on two branches of the railroad, the Shoup's Run branch, with its switchbacks, and the Ten Mile Run branch. The introduction of this coal to market has been rapidly followed by extensive developments, so that a shipment of 400,000 tons will be reached this year. The larger operators are those on Shoup's Run, including R. B. WIGTON, with two collieries; the Powelton Coal and Iron Company, three collieries; WM. A. ORBESON, WM. BACON, DAVID BLAIR; while on Six Mile Run may be mentioned the Kemble Coal and Iron Company, GEORGE MEARS, and others.

On the Tyrone and Clearfield railroad we find a very superior steam generating coal. Its quality was so soon recognized that, although not ten years have passed since the opening of the railroad, at least 20 collieries are in active operation, producing 250,000 tons per annum. Several of the operations on this road are very extensive, the Kittaning Coal Company, the Mushannon Coal Company, the Decatur Coal Company, the Derby Coal Company, and the Powelton Coal and Iron Company, being the most prominent.

The supply of coal from the semi-bituminous districts is practically inexhaustible, and capable of almost unlimited extension. It only remains, therefore, to show its adaptability for several purposes, in order to convince the most skeptical that its partial substitution for anthracite would secure to the consumer a more economical fuel, at more equable prices.

The average current selling prices of anthracite and semi-bituminous coals, free on board of vessels at Philadelphia, for the shipping season of 1869, were, for anthracite, $6 per ton, and for semi-bituminous, $4 75 per ton, showing a disparity of $1 25 per ton in favor of semi-bituminous coal. This sum alone, to purchasers and consumers of thousands of tons annually, amounts to a reasonable profit. Previous to the general introduction of semi-bituminous coals, anthracite was almost universally employed in Pennsylvania by rolling-mills, railroads, and manufacturers generally, while now nine-tenths of the railroads and rolling-mills, and a majority of the manufacturers of that State, have substituted the coals from the regions above described. For generating steam, these coals are particularly well adapted, as they burn freely, ignite rapidly, and are far less destructive than anthracite to boilers and bars. By actual experiment, it has been ascertained that a ton of semi-bituminous coal will generate 15 per cent. more steam than a similar quantity of the best anthracite.

The good qualities of anthracite are well known, and its superiority for certain purposes is not likely to be overthrown; but it would be well for manufacturers and heavy consumers to consider whether they are wise in using anthracite *at any cost*, when the substitute proposed would be, in all cases, cheaper, and, in many cases, better.

A Welsh Railway on a New Principle.

THE Portmadoc and Festiniog Railway is now attracting much attention amongst scientific men. This is a little line in North Wales, which was originally constructed for the purpose of acting as a tramway for slate and stone from the hills of Merionethshire to the seashore. It is now being used as a regular goods and passenger line. The chief peculiarity in its construction is that the gauge is only two feet broad. Hence, though the line runs through a very difficult country, the expenses of construction and working are so small that the traffic yields the enormous revenue of thirty per cent. The reason is simple enough. It is because the proportion between the dead weight and paying weight is so much less than upon other railways. The engine and tender upon this line weigh about ten tons, against forty tons upon the wider gauge of other lines. Instead of a first-class carriage weighing 7½ tons, to carry thirty-two passengers, and representing nearly 5 cwt. of dead weight for each passenger, the carriages on the Festiniog weigh only 30 cwt. for twelve passengers, or 2½ cwt. for each person carried. The *Railway News*, without going so far as to say that a two-foot gauge will furnish the railway of the future, is confident its economy and efficiency will cause it to be extensively adopted.—*London Colliery Guardian.*

An Iron Furnace at Emaus, Pa.

THE Allentown *News*, of October 13, says: "The project of building and working an iron furnace at Emaus, in this county, was recently started, and has now very fair prospects of being successfully realized. A number of enterprising citizens met at Shoemaker's Hotel, at Emaus, on Monday evening, to organize a stock company for the above-mentioned enterprise. It was resolved to form a company with a capital of $300,000, in 6,000 shares, at $50 each, ten per cent. of which, or $5 per share, to be paid in as soon as the subscriptions shall have reached the amount of $50,000. Mr. John Weber was nominated temporary President. A considerable amount of the stock has already been taken."

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ROSSITER W. RAYMOND, Ph. D., Editor,

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Assays of Copper Ores.

IT is acknowledged that no metallurgical establishment—certainly none in which ores are treated by smelting—can be administered with proper economy and success, unless the progress of daily operation is tested and controlled by numerous assays. Crude ores, roasted ores, mattes, regulus, slags, in fact, the products of every stage of the metallurgical process, as well as its final results, require to be assayed, in order that not only the aggregate of loss may be ascertained, but its sources discovered, and the exact degree of relative importance assigned to each.

The deficient management of many smelting establishments in this respect is due, not so much to absolute ignorance, or contempt of the assistance which scientific accuracy renders, as to the disinclination of owners to incur the expense of employing a competent chemist, in addition to the superintendent. The latter, we will charitably suppose, is in most cases able to make his own analyses; but, being occupied with the general conduct of the works, he reduces this part of his labor to a minimum, and makes his assays as few, instead of as many, as possible. A method of assaying copper-bearing substances which shall be so nearly mechanical as to be safely entrusted to a comparatively unskilled assistant, is a desideratum. In other words, it is desirable to have a uniform method of procedure, which can be applied with equal ease and equally accurate results to all classes of ores, mattes and slags.

In recent conversation with Mr. A. MEZGER, a metallurgist of wide experience, we learned a plan employed by him in practice, and deserving the attention of metallurgists. Mr. MEZGER was long director of a smelting establishment in the Ural mountains, and found it necessary to devise a mode of executing copper-assays which would suit the capacity of his assistant, an uneducated Russian. The ordinary volumetric and colorimetric methods require too much skill and discrimination on the part of the assayer, especially when they are applied to various combinations of copper. After many experiments, he succeeded in his aim, by a simple alteration of the solution. He dissolved the substance to be assayed, *whether it was ore or furnace product, sulphuret, sulphate, oxide or metal,* in ordinary concentrated sulphuric acid, diluted with an equal weight of water, to which was added potash-saltpeter, in quantity equal by weight to the pulverized assay. In this menstruum the copper dissolves with ease and rapidity when gently boiled; and may then be determined volumetrically by means of a test-solution of sulphide of sodium.

The constant use of this mixture for dissolving even the most obstinate combinations of copper, led Mr. MEZGER to the belief that it might be made generally serviceable for minerals and metalliferous products which resist more or less successfully the action of ordinary acid. The great energy of the oxidizing and solving action of sulphuric acid, combined in this way with saltpeter, is due to the liberation of nitric acid, which in its nascent state parts with a portion of its oxygen, with probably greater facility than under any other circumstances.

Moving Days.

THE first of May enjoys, in this neighborhood the distinction of being, *par excellence*, the "moving day;" but its antipodes, the first of November, shines with a faint, reflected glory of the same kind. On that day the six-months' leases expire, and numerous unfortunate tenants are turned into the street, or the nearest boarding-house, which is often but little better.

Modern engineering has introduced the pleasant habit of moving house and all. Could it be rendered universal, what a comfort this would be! A man need then only select a lot to fit his house, and, when moving day came, quietly haul out of one dock and sail into the other. It is quite immaterial whether the house be of wood, brick, or stone,; it can be moved without spilling a drop of water from the glasses on the dinner-table, or causing a single crack in the delicate mouldings of the parlor ceiling.

The Chicago people have crowed a good deal over the skill with which they raise whole blocks of buildings, without removing them from the lots on which they stand. We remember hearing HENRY WARD BEECHER say that he once delivered a lecture in that city, in a building which was being steadily raised by jack-screws. The hall, the speaker, and the crowded audience, moved slowly heavenward throughout the lecture. But Boston now claims the palm for a more remarkable feat.

In that city the Hotel Pelham, a free-stone building, ninety-six feet high, and weighing 10,000 tons, was recently moved fourteen feet in three days, by means of rollers and screws, without disturbing its contents, or producing a single crack in its walls. The fastest time reported was two inches in four minutes. This may seem slow to the frequenters of Jerome Park; but it must be remembered that public safety requires us to prevent masses of 10,000 tons from rushing about town at high speed. The building referred to was moved for the purpose of widening and straightening a crooked street; and we may expect to hear of many repetitions of the exploit, as there are plenty of such streets left in Boston.

We fear that the general introduction of this fashion for domestic purposes will be hindered by its cost. The contractor who moved the Hotel Pelham fourteen feet received $25,000 for the job. At this rate, three moves would be considerably worse than one fire.

Mining Statistics of Great Britain.

SIR RODERICK MURCHISON issues a preliminary notice of the forthcoming account of the "British Geographical Survey, and the Mineral Statistics of the United Kingdom for 1868," compiled by Mr. ROBERT HUNT. Both the production and shipments of coal show a falling off from the figures of the previous year, which is ascribed to commercial depression. The production of ores, on the other hand, is about the same as usual. The following is the quantity of minerals raised in 1868: Coal, 103,142,157 tons; iron ore, 10,169,231; tin ore, 13,953; copper ore, 157,335; lead ore, 95,236; zinc ore, 12,781; iron pyrites (sulphur ores), 76,484; gold quartz, 1,191; arsenic, 3,300; gossan and ochres, 6,692; wolfram, 9; fluor spar, 60; manganese, 1,700; barytes, 14,235; coprolites (organic phosphatic nodules), 37,500; salt, 1,513,840; clays, fine and fire, 1,012,479; total value, £33,837,858. The quantity of metals obtained from the ores enumerated is: Iron (pig), 4,970,206 tons; tin, 9,300; copper, 9,817; lead, 71,017: zinc, 3,713; silver, 835,542 oz.; gold, 1,012 oz.; and the total value is £15,736,416.

The superior comprehensiveness and detailed accuracy of the British statistics, as compared with our own, is sufficiently evident; and should arouse the attention of our legislators to the necessity of adopting some adequate system for the performance of this most important work. The great mining industry of our Pacific coast, the products of which amount to as much in money value as those of all the metal mines of Great Britain, is put off with a single travelling Commissioner, who is expected to report immediately at the close of each year the "statistics" of the year. Accuracy and completeness are impossible under such circumstances. The only thorough feature in the work is the thorough manner in which it wears out and crushes the Commissioner, who, as his labors culminate in the production of a volume, is divided in soul between an earnest desire to make his work as comprehensive and exact as possible, and a dreadful impulse to lie down somewhere, and go to sleep.

But the immense mining industry of coal, iron, etc., in the Atlantic States receives no governmental attention whatever. What we need is an organized statistical department for mining. In many countries this interest is considered so important, that its chief representative is a Cabinet minister. We do not demand for it so much as that; but we think something should take the place of the present almost utter neglect and indifference of Congress.

Nature Outdone.

THERE was an ingenious model on exhibition at the late Fair of the American Institute, to which Mr. L. S. FITHIAN, the inventor, gave the name of the "Vertical Multiplier." It was a contrivance for increasing the velocity imparted to a driving-pulley, by means of a combination of wheels of equal size, running upon the same shaft. The end attained is the same as is usually effected by countershafting and playing a larger wheel upon a smaller; and the device has been, it is said, successfully applied by SOUTHMAYD & Co. to a velocipede. Its theoretical and practical advantages are set forth in a circular which was distributed at the Fair, and a copy of which now lies before us.

It is difficult to give a clear notion of this apparatus in words alone. It consists, in its simplest form, of a vertical cog-wheel made fast upon a horizontal shaft, and playing on a horizontal wheel, which in turn communicates motion to a second vertical wheel running loose on the shaft to which the first wheel is fixed. This second vertical wheel, being of the same size as the first, acquires the same velocity, but in a contrary direction. This motion it communicates to a fourth wheel, which revolves upon an arm fixed at right angles to the main shaft. As the shaft revolves, this arm carries the fourth wheel around with it. The fourth wheel, in making one revolution around the shaft, makes two around its own axis; and all three revolutions are communicated to a fifth and last vertical wheel, running loose upon the shaft, at the opposite end from the first. The last wheel makes, therefore, three revolutions while the first makes one; and the whole construction constitutes a curious illustration of the principles involved in the celebrated "wheel puzzle," with which the columns of the *Scientific American* were so long occupied.

So long as the discussion of that problem was a mere strife about words, it scarcely merited the attention of scientific men; but this practical application of it is accompanied with claims of a startling character. The inventor elaborately sets forth that he multiplies motion without using wheels of different diameters, or, in other words, without employing lever-arms of different lengths, and "without usual loss of leverage." This latter phrase would convey no meaning, but for the distinct claim of the inventor, that by a single revolution of his first wheel under a weight of 100 pounds he can produce three revolutions of the last wheel, under a weight of 50 pounds; or, in other words, in this machine, 100 foot-pounds of force will perform 150 foot-pounds of work. The contradiction of all accepted laws of motion involved in this claim is frankly acknowledged by Mr. FITHIAN, who thinks he has discovered a new principle in mechanics, overthrowing the experience of the past. Young students, who would like to sharpen their wits upon his demonstration, are recommended to call upon him at 194 Broadway.

It is not our object to discuss this claim, though the fallacy of it can be shown from the inventor's own diagrams. Our "wheel" contemporary published his arguments on the 5th of June, and to that journal we refer the curious. The point which now demands our attention is made by the inventor in these words: "It should be constantly borne in mind that there is no claim made for multiplication or increase of power, but simply not so much loss as by the old mode of counter-shafting."

It is this sort of sophistry that has taken the place of the former open avowals of the discovery of perpetual motion. In point of fact there is no loss of power in counter-shafting, except by friction; and in that respect the contrivance we are considering is greatly inferior to the old plan. It has nothing to recommend it, except compactness and ingenuity.

That the claims advanced for it simply amount to the *perpetuum mobile* in disguise, a very little calculation will show. It is asserted that by means of the "vertical multiplier," a weight of 100 pounds falling one foot will lift (friction apart) a weight of 50 pounds three feet; and this is announced as a "saving" of 16⅔ per cent. over other appliances, by means of which only 33⅓ pounds can be lifted three feet by this force. Now it would be easy to construct a machine, worked by descending weights, in which the loss by friction would be less than 16 per cent. of the power. Let us suppose this loss to be 10 per cent.: It follows that our machine, with a vertical multiplier attached, will lift 50 pounds, or, subtracting loss by friction, 45 pounds, to the top, while 100 pounds of motor-weight is descending one-third of the way to the bottom. While the 100 pounds descends another third, a second 45 pounds is lifted to the top; and when the 100 pounds has reached the bottom, it is represented by 135 pounds at the top. This 135 pounds being let fall will in like manner hoist about 182 pounds; and a simple arrangement for automatic connection and disconnection of the weights would give us a machine of more than perpetual motion—capable of continually effecting work. Start it with one hod of bricks, and it would keep the masons supplied till the house was done. Attach it to your pantaloons as you go up stairs, and you need only ascend three flights to find yourself in the fifth story, with ten per cent. of vigor in your pocket to spare!

These men who periodically "overturn" the laws of motion, mechanics, chemistry, etc., are like children who pretend the world is upside down because they are standing on their own heads.

Large Sale of Coal Lands.

THE large tract of the Hanover Coal Company, situated ten miles from Richmond, Virginia, and comprising 1428 acres, with mines, machinery, railroad, etc., in working order and capable of shipping 800 to 1000 tons of coal per diem, is for sale. Particulars will be found in the advertisement in another column. The well known importance of the Richmond coal-fields, the fine quality of the coal, and the growing demand caused by the revival of industry in the South, recommend this opportunity to the attention of capitalists.

The Mechanics Institute of San Francisco.

FROM a correspondent, we learn that the Fair of the San Francisco Mechanics' Institute, just closed, will net the Institute about $35,000, the receipts having been about $65,000. The sum of $25,000 will be paid out upon the debt for the building, and $10,000 will be expended for books and philosophical apparatus. This institution is one of the best managed and most successful in the country.

The Borneo Quicksilver Mine.

THE quicksilver mine, which was discovered near the town of Sarawak (Borneo) in 1867, promises to prove one of the richest in the world. A trial shipment of native ore has been found by analysis to contain 70 to 80 per cent. A very promising coal field has been discovered in the Linga district, but no arrangement has yet been made for working it.

Luminous House-Numbers.

A FRENCH chemist has invented a method of making the numbers of houses as distinctly legible by night as by day. It consists in rubbing the figures with a preparation of phosphorus, which will render them luminous. The application need be renewed only once a month.

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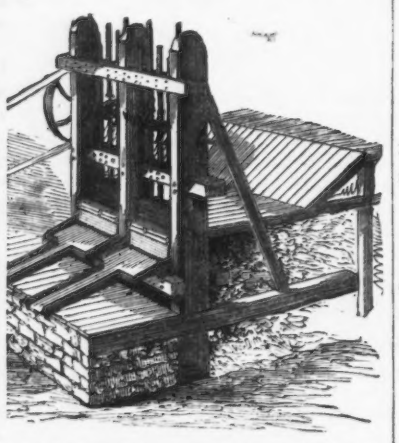

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Dip of mine, how to find and lay on (plan)
Explosion, the power of an
" At Lund-hill, in what part of the mine it was supposed to take place (plan)
" How the power may be diminished
Furnace, how to find the horse-power of
" The place of fixing, to produce the largest ventilating current
" Engravings of ground floor, front and back view
" Remarks upon
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" Do. properties of
" (After, or choke damp) composition of
" (Carburetted hydrogen) do.
" Choke damp and carbonic acid, not one and the same in quality
" The effect produced on people by inhaling such
" The quantity required for an explosive mixture
" The elasticity of
" The weight of
" The nature and quality of
" Why some mines generate and produce more than others
" Why some mines generate a mixture of
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Up-cast larger than down-cast (plan)
Ventilating mines by mechanical power
Ventilation, several ways of
Weather, how a change of affects the workings
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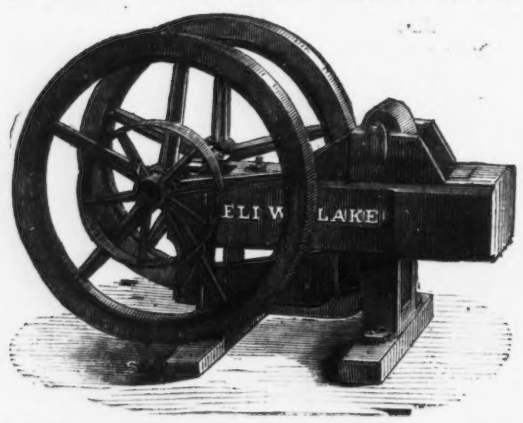

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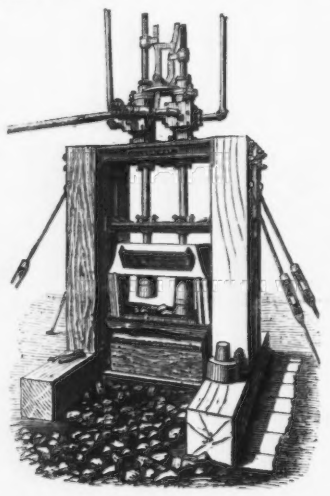

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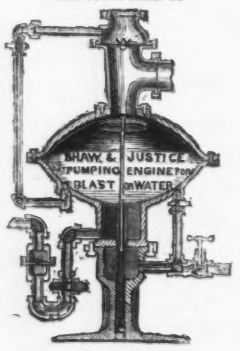

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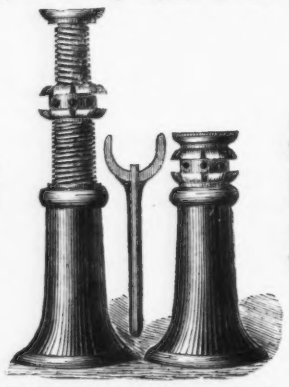

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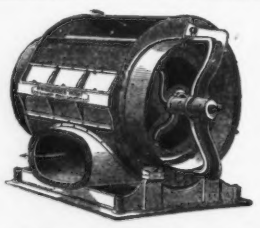

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Is now in succesful working operation in New York, Chicago, Jersey City: also at the Hoosac Tunnel (Mass.), Lake Superior, Colorado, and Nova Scotia Mines, Union Pacific and Boston and Hartford Railroads; also in deepening the beds of the Illinois and Michigan Canals, and Des Moines Rapids, and numerous other localities.

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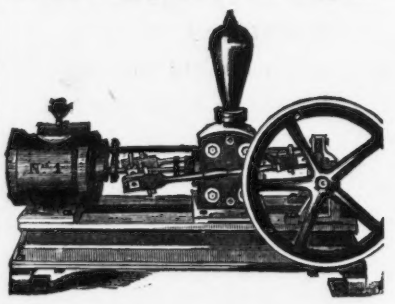
THE WOODWARD

Steam Pump Manufacturing Company.

MANUFACTURERS OF THE
WOODWARD PATENT IMPROVED SAFETY
Steam Pump and Fire Engine.



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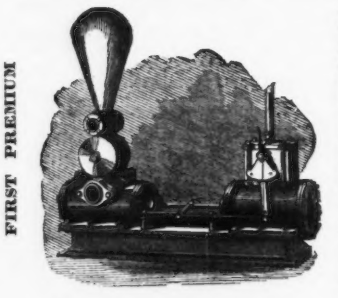

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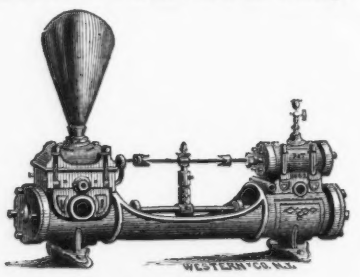
Knowles' Patent Steam Pump.



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(Working with Plungers, and especially arranged for pumping water containing dirty or gritty matter.)

Pumps for every possible duty, and all fully guaranteed. Also,

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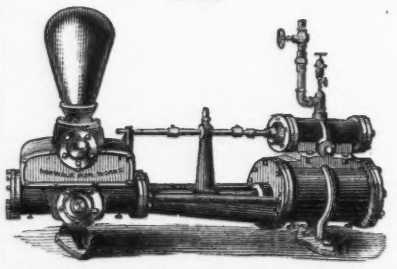

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STEAM AND BLOWING ENGINES,

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IRON AND BRASS CASTINGS, of every description.
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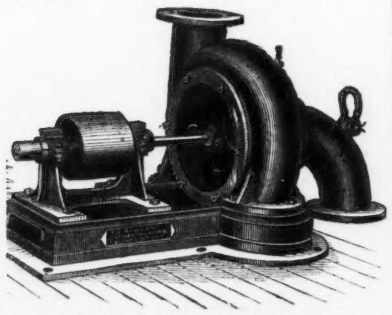

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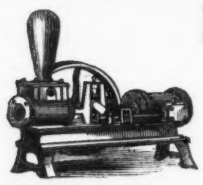

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These pumps are the cheapest first-class pumps in the market.

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Steam Pumping Engines, Single and Duplex, Worthington's Patent, for all purposes, such as Water Works Engines, Condensing or Non-condensing; Air and Circulating Pumps, for Marine Engines; Blowing Engines; Vacuum Pumps, Stationary and Portable Steam Fire Engines; Boiler Feed Pumps, Wrecking Pumps,

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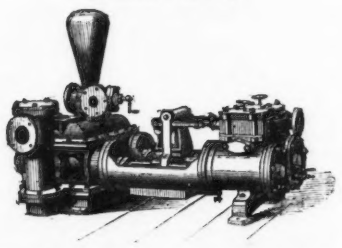

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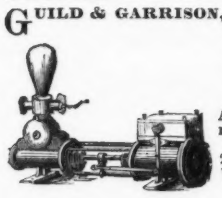

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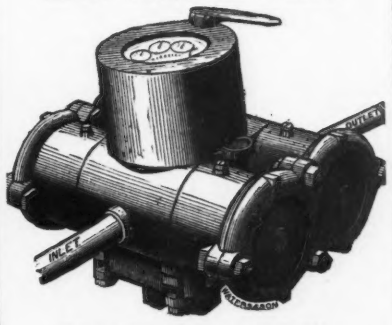

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This Meter is also Used for the Measurement of Oil.

IT COMBINES

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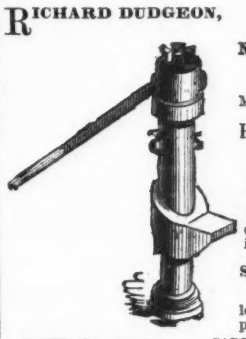
RICHARD DUDGEON,



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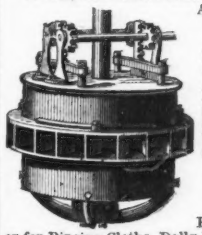

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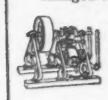

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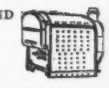

Address Manufacturers

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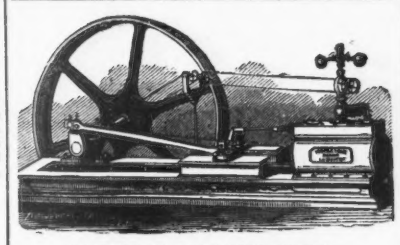

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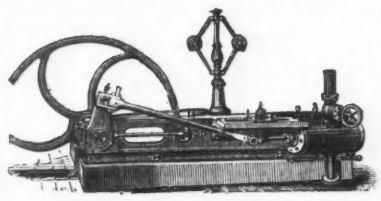

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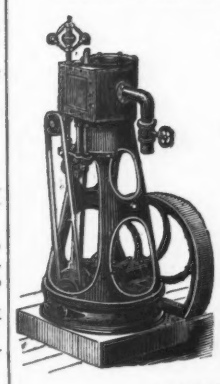

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Also, BOILERS, TANKS, and CASTINGS, of all descriptions. nov 2:1y

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Manufacturing Company of Penn.

This Company is now prepared to furnish

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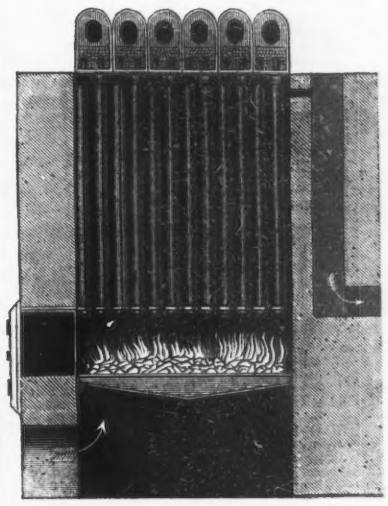

Patent Improved Steam Generator,

Of any power required, upon two weeks' notice. They have been introduced in this city and thoroughly tested, with most satisfactory results, and are sold under Guarantee of Absolute

Safety from Destructive Explosion.

They are cheaper in first cost and in expense of erection, more economical in fuel, durable and convenient in use, than any other apparatus for generating steam. For Mining purposes it is unequalled, owing to the facility with which it can be transported and erected.

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SAFETY BOILER.

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CIRCULAR SAWS WITH EMERSON'S PATENT MOVEABLE TEETH.

These Saws are meeting with unprecedented success, and their great superiority over every other kind, both as to efficiency and economy, is now fully established.

Also,

EMERSON'S PATENT PERFORATED CIRCULAR AND LONG SAWS,

(All Gumming avoided,) and

EMERSON'S PATENT ADJUSTABLE SWAGE,

for Spreading, Sharpening, and Shaping the teeth of all Saws. Price, $5. Manufactured by the

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Matching Machines, Moulding Machines, Saw Benches, Chair Lathes, Self-Oiling Pulleys, etc.

june5-tf FITCHBURG, MASS.

RAILROADS.

LEHIGH & SUSQUEHANNA RAILROAD.
(LEHIGH COAL AND NAVIGATION CO.)

Summer Arrangement.

On and after Monday, July 12, 1869, Passenger Trains on the Lehigh & Susquehanna Railroad will run as follows :

DOWN TRAINS.

	No. 1. A.M.	No. 3. A.M.	No. 5 P.M.	No 7. P.M.
Leave Green Ridge	9:05	7:00	1:00	5:15
Scranton	9:10	7:05	1:05	5:20
Pittston	9:36	7:35	1:35	5:52
Wilkesbarre	10:00	8:00	2:00	6:17
White Haven	11:23	A.M.	P.M.	P.M.
Mauch Chunk	12:00 / 1:03			No. 9. A.M. 6:50
Catasauqua	2:01			8:04
Allentown	2:10			8:15
Bethlehem	2:20			8:30
Easton	2:48			9:05
Phillipsburg	2:52			9:10
Philadelphia	4:45			A.M.
Arrive New York	6:30 C.R.R. / 9:40 M. & E.R.R. P.M.			

UP OR NORTHWARD TRAINS :

	No. 2. P.M.	No. 10 A.M.
Leave New York	2:00 C. R. R. / 8:30 M. & E. R. R.	
Philadelphia	9:45	
Phillipsburg	11:50	7:00
Easton	11:55	7:04
Bethlehem	12:23	7:36
Allentown	12:36	7:50
Catasauqua	12:53	8:04
Mauch Chunk	2:05	9:20

	No. 4. A.M.	No. 6. P.M.	No. 8. P.M.
White Haven	3:23	P.M.	P.M.
Wilkesbarre	5:00	8:30	2:25	6:45
Pittston	5:25	8:55	2:50	7:10
Scranton	5:56	9:26	3:20	7:40
Arrive Green Ridge	6:00	9:30	3:25	7:45
	P.M.	A.M.	P.M.	P.M.

Connections.

DOWN TRAIN No. 1, makes close connection at Penn Haven with Lehigh Valley Railroad, for Beaver Meadow, Hazleton and Mahanoy City.

DEL. & HUDSON CANAL CO., R.R.—Up trains Nos. 4 & 6, and down trains Nos. 1 and 7 connect at Green Ridge with trains on Delaware & Hudson Railroad, to and from Carbondale.

NORTH PENNA. R.R.—Down train No. 1, and up train No. 0 connects at Bethlehem with trains on North Pennsylvania R.R., arriving at Philadelphia at 4:45 P.M. Returning, leave Philadelphia for Scranton, Wilkesbarre and Mauch Chunk at 9:45 A.M.

LEHIGH & LACKAWANNA R.R.—Down train Nos. 1 and 0, and up train Nos. 2 and 0 connect at Bethlehem with Lehigh & Lackawanna R. R. for Bath and Chapman Quarries. Returning leaves Bath at 7:00 A.M.

MORRIS & ESSEX R. R.—Down train No. 1 and 0 connect at Easton with Morris & Essex Railroad for Newark and New York. Returning leave New York (Barclay street,) for Scranton, Wilkesbarre and Mauch Chunk at 8:00.

CENTRAL RAILROAD OF NEW JERSEY.—Down trains Nos. 1 and 9 connect at Phillipsburg with trains for New York. Returning, leave New York (foot of Liberty street,) for Scranton, Wilkesbarre and Mauch Chunk at 9:00 A. M.

BELVIDERE & DELAWARE R.R.—Down train No. 0 and up train No. 2 connect at Phillipsburg with Belvidere & Delaware Railroad to and from Trenton and Philadelphia.

MENDES COHEN,
Superintendent.

LEHIGH VALLEY RAILROAD.

ON AND after June 1, 1869, trains on the Lehigh Valley Railroad will run as follows :

DOWN TRAINS.

	A.M	P.M.
Leave Tunkhannock	4.20	
L. & B. Junction	7.30	1.15
Pittston	7.40	1.25
Wilkesbarre	8.00	1.45
White Haven	9 25	3.08
Mauch Chunk	10.35	4.20
Allentown	11.43	5.50
Bethlehem	11.55	6.05
	P.M.	
Easton	12.25	6.35
Philadelphia	2.10	8.35
Arrive New York	3.50	9.00

UP TRAINS.

	P. M.	M.
Leave New York	6.50	12.00
		P. M.
Philadelphia	7.45	1.45
Easton	10.00	3.25
Bethlehem	10.30	4.00
Allentown	10.45	4.20
	M.	
Mauch Chunk	12.00	5.45
	P. M.	
White Haven	1.32	7.18
Wilkesbarre	2.50	8.35
Pittston	3.10	8.55
L. & B. Junction	3.20	9.05
Arrive Tunkhannock	4.30	

☞ No change of cars between Scranton and New York, or between Scranton and Philadelphia.

ROBERT H. SAYRE, Sup't and Eng.
H. STANLEY GOODWIN, Ass't Gen. Supt.
June 1, 1869.

DELAWARE, LACKAWANNA & WESTERN R. R.—Morris & Essex Division.

Summer Arrangement,

Commencing Monday, April 5, 1869, and running on the following time until further notice.

	L. and Express. A. M.	Scranton. Mail. A.M.	Scranton, Express. P. M.
Leave Easton	6.55	11.30	5.30
Washington	7.28	12.10	6.15
Hackettstown	7.48	12.36	6.45
Dover	8.30	1.24	7.30
Rockaway		1.34	
Morristown	9.00	2.00	8.00
Orange		2.50	8.50
Newark	9.50	3.00	9.00
Arrive New York	10.25	3 35	9.40
	A.M.	P. M.	P.M.

RETURNING.

	P. M.	A. M.	A.M.
Leave New York	4.00	7.00	8.30
Newark	4.40	9.05	7.40
Orange			7.53
Morristown	5.33	10.00	8.45
Rockaway			9.09
Dover	6.00		9.20
Hackettstown	6.42	11.05	10.08
Washington	7.02	11.25	10.33
Arrive Easton	7.35	11.57	11.10

Connections.

At Washington, with Delaware, Lackawanna & Western Railroad, for Water Gap, Stroudsburg, Wilkesbarre, Carbondale, Scranton and Great Bend.

At Easton, with Lehigh Valley and Lehigh & Susquehanna Railroads for Bethlehem, Allentown, and Mauch Chunk.

S. SCHOCH,
Ass't Superintendent.

E. A. HENRY,
Gen. Passenger Agent.

Hoboken, N. J., April 21, 1869.

RAILROADS.

READING RAILROAD.—GREAT TRUNK LINE from Philadelphia to the interior of Pennsylvania, the Schuylkill, Susquehanna, Cumberland and Wyoming Valleys, the North, Northwest, and the Canadas.

Summer Arrangement of Passenger Trains, July 12, 1869.

Leaving the Company's Depot, Thirteenth and Callowhill streets, Philadelphia, at the following hours :

MORNING ACCOMMODATION.

At 7.30 A.M. for Reading and all intermediate stations and Allentown. Returning, leave Reading at 6.30 P. M., arrive in Philadelphia 9.15 P.M.

MORNING EXPRESS.

At 8.15 A. M., for Reading, Lebanon, Harrisburg, Pottsville, Pinegrove, Tamaqua, Sunbury, Williamsport, Elmira, Rochester, Niagara Falls, Buffalo, Wilkesbarre, Pittston, York, Carlisle, Chambersburg, Hagerstown, &c.

The 7.30 A. M. train connects at READING with East Pennsylvania Railroad trains for Allentown, &c., and the 8.15 A.M. train connects with the Lebanon Valley train for Harrisburg, &c.; at PORT CLINTON with the Catawissa Railroad trains for Williamsport, Lock Haven, Elmira, &c.; at HARRISBURG with Northern Central, Cumberland Valley, and Schuylkill and Susquehanna trains for Northumberland, Williamsport, York, Chambersburg, Pinegrove, &c.

AFTERNOON EXPRESS

Leaves Philadelphia at 3.30 P.M. for Reading, Pottsville, Harrisburg, &c., connecting with Reading and Columbia Railroad trains for Columbia, &c.

POTTSTOWN ACCOMMODATION

Leaves Pottstown at 6.25 A.M., stopping at intermediate stations; arrives in Philadelphia at 8.40 A. M. Returning, leaves Philadelphia at 4.30 P. M., arriving in Pottstown at 6.40 P.M.

READING ACCOMMODATION

Leaves Reading at 7.30 A.M., stopping at all way stations; arrives in Philadelphia at 10.15 A.M.

Returning, leaves Philadelphia at 5.15 P. M.; arrives in Reading at 8.00 P.M., and connects with Market Train for Pottsville.

Trains for Philadelphia leave Harrisburg at 8.10 A.M. and Pottsville at 8.45 A.M., arriving in Philadelphia at 1.00 P M. Afternoon trains leave Harrisburg at 2.05 P. M. and Pottsville at 2.45 P.M., arriving at Philadelphia at 6.45 P. M.

HARRISBURG ACCOMMODATION

Leaves Reading at 7.15 A.M. and Harrisburg at 4.10 P.M. Connecting at Reading with Afternoon Accommodation south at 6.30 P.M., arriving in Philadelphia at 9.15 P. M.

MARKET TRAIN, with a passenger car attached, leaves Philadelphia at 12.45 P. M. for Pottsville and all way stations; leaves Pottsville at 5.40 A.M., connecting at Reading with Accommodation Train for Philadelphia and all way stations.

All the above trains run daily, Sundays excepted.

Sunday trains leave Pottsville at 8.00 A.M. and Philadelphia at 3.15 P. M.

Leave Philadelphia for Reading at 8.00 A.M. Returning from Reading at 4.25 P.M.

CHESTER VALLEY RAILROAD.

Passengers for Downingtown and intermediate points take the 7.30 A.M., 12.45 and 4.30 P.M. trains from Philadelphia, returning from Downingtown at 6.10 A.M., 1.00 and 5.45 P.M.

PERKIOMEN RAILROAD.

Passengers for Skippack take 7.30 A M., 4 30 and 5.15 P.M. trains from Philadelphia; returning from Skippack at 6.15, 8.15, A. M. and 1.00 P. M. Stage lines for various points in Perkiomen Valley connect with trains at Collegeville and Skippack.

NEW YORK EXPRESS, FOR PITTSBURG AND THE WEST.

Leaves New York at 9.00 A. M. and 5.00 and 8.00 P.M., passing Reading at 1.05 A.M., and 1.50 and 10.19 P.M., and connecting at Harrisburg with Pennsylvania and Northern Central Railroad Express Trains for Pittsburg, Chicago, Williamsport, Elmira, Baltimore, &c.

Returning, Express Train leaves Harrisburg on arrival of Pennsylvania Express from Pittsburg at 2.35 and 5.20 A. M., 10.55 P. M. passing Reading at 4.30 and 7.05 A. M. and 12.50 P. M.; and arriving at New York at 11.00 A. M. and 12.20 and 5.00 P. M. Sleeping cars accompany these trains through between Jersey City and Pittsburg without change.

A mail train for New York leaves Harrisburg at 8.10 A.M. and 2.05 P. M. Mail train for Harrisburg leaves New York at 12 noon.

SCHUYLKILL VALLEY RAILROAD.

Trains leave Pottsville at 6.30 and 11.30 A. M. and 6 40 P.M., returning from Tamaqua at 8.35 A. M. and 2.15 and 4.15 P.M.

SCHUYLKILL AND SUSQUEHANNA RAILROAD.

Trains leave Auburn at 6.25 A. M. for Pinegrove and Harrisburg, and at 12.10 P.M. for Pinegrove and Tremont; returning from Harrisburg at 6.20 P. M., and from Tremont at 6.45 A.M. and 7.40 P.M.

CENTRAL RAILROAD OF NEW JERSEY.—Passenger and Freight Depot in New York, foot of Liberty street; connects at Hampton Junction with the Delaware, Lackawanna and Western Railroad, and at Easton with the Lehigh Valley Railroad and its connections, forming a direct line to Pittsburgh and the West without change of cars.

ALLENTOWN LINE TO THE WEST.

Three Express Trains to the West, except Sundays, when one train in the evening.

Sixty miles and three hours saved by this line to Chicago, Cincinnati, St. Louis, &c, with but one change of cars.

Silver Palace cars through from New York to Chicago.

SUMMER ARRANGEMENT.

Commencing August 16, 1869.—Leave New York as follows :

6.55 A. M.—For Easton, Bethlehem, Mauch Chunk, Williamsport, Wilkesbarre, Mahanoy City, Tukhannock,

7.15 A. M.—For Somerville.

8.30 A. M.—For Flemington, Junction, Stroudsburg, Water Gap, Scranton, Kingston, Pittston, Great Bend,

9 A. M.—WESTERN EXPRESS.—For Easton, Allentown, Harrisburg and the West, without change of cars to Cincinnati or Chicago, and but one change to St. Louis. Connects at Harrisburg for Erie and the Oil Regions. Connects at Junction for Stroudsburg, Water Gap, Scranton, &c. Connects at Phillipsburg for Mauch Chunk, Wilkesbarre, &c.

12 M.—For Flemington, Easton, Allentown, Mauch Chunk, Wilkesbarre, Reading, Columbia, Lancaster, Ephrata, Litiz, Pottsville, Scranton, Harrisburg, &c.

3.30 P. M.—For Easton, Allentown, Mauch Chunk and Belvidere.

4.30 P. M.—For Somerville.

5.00 P. M.—CINCINNATI EXPRESS.—For Easton, Bethlehem, Allentown, Reading, Harrisburg, Pittsburgh, Chicago and Cincinnati. Sleeping Cars to Pittsburgh and Chicago. Connects at Junction with Delaware, Lackawanna and Western Railroad for all Stations to Scranton.

5.25 P. M.—For Somerville and Flemington.

6 P. M.—For Easton and intermediate stations.

7.00 P. M.—For Somerville.

8.00 P. M.—WESTERN EXPRESS TRAIN.—For Easton, Allentown, Reading, Harrisburg, Pittsburgh and the West—connects at Harrisburg with train for Williamsport, Erie, &c.

8.10 P. M.—EMIGRANT—Stopping only at principal stations.

9.00 P. M.—For Plainfield.

11.45 P. M.—For Plainfield on Wednesdays and Saturdays only.

Sleeping cars through from Jersey City to Pittsburgh every evening.

Trains leave for Elizabeth at 5.45, 6.30, 6.55, 7,15, 8.15, 8.30, 9.00, 9.20, 10.30, 11.40 A. M., 12.00 M., 1.00, 2.00, 3.00, 3.30, 3.45, 4.15, 4.30, 4.45, 5.10, 5.25, 5.45, 6.00, 6.25, 7.00, 7.45, 8.00, 8.10, 9.00, 9.45, 10.45, 11.50 P. M.

Tickets for the West can be obtained at the office of the Central Railroad of New Jersey, foot of Liberty street, N. Y.; at No. 1 Astor House; Nos. 254, 271, 526 Broadway; at No. 10 Greenwich street, and at the principal hotels.

R. E. RICKER, Superintendent.
H. P. BALDWIN, Gen. Pass. Agent.

RAILROADS.

MORRIS AND ESSEX RAILROAD.—DELAWARE, LACKAWANNA AND WESTERN RAILROAD CO. (Lessees). Depots in New York, foot of Barclay street and foot of Christopher street.

Summer arrangements, commencing MONDAY, May 10, 1869.

8.00 A. M.—MAIL TRAIN.—Connecting at Denville with Boonton Branch, at Dover with Chester Branch, at Waterloo with the Sussex Railroad for Andover and Newton, at Washington with the D. L. and W. Railroad for Water Gap, Stroudsburg, Scranton, and Great Bend, and all points on the Lackawanna and Bloomsburg, and Delaware and Hudson River Railroad; at Easton with the Lehigh and Susquehanna Railroad for Bethlehem, Allentown, Mauch Chunk, and Wilkesbarre.

11.30 A. M.—LEHIGH VALLEY EXPRESS—Stops at Newark, Morristown, Dover, Hackettstown, Washington, Phillipsburg, and Easton; connects at Phillipsburg with Bel., Del. Railroad for Belvidere, &c., and at Easton with L. V. R. for Bethelehem, Allentown, Mauch Chunk, and Wilkesbarre.

4.00 P. M.—SCRANTON EXPRESS—Connects at Washington with the D. L. & W. R. R. for Water Gap, Stroudsburg, and Scranton at Dover with Chester Railroad, and at Waterloo with Sussex Railroad.

6.30 A. M. and 4.30 P. M.—To Summit and intermediate stations.

6.30, 7.30, 9.30 A. M., and 1.00, 3.40, 5.30, 8.45, 11.45 P. M.—To South Orange and intermediate stations.

11.40 A. M., 3.00 and 6.30 P. M.—To Morristown and intermediate stations.

5.10 P. M.—Morristown Express.

For Newark at 6.30, 7.30, 8.00, 8.30, 9.30, 10.30, 11.00, 11.30, 11.40, A. M., 1.00, 2.00, 3.00, 3.30, 3.40, 3.50, 4.00, 4.30, 5.00, 5.10, 6.10, 6.30, 7.45, 8.45, and 11.45 P. M.

For Bloomfield and Montclair—At 8 30, 11.00 A. M.; 2.00, 3.50, 5,00 and 6.10 P. M.

S. SCHOCH, Assistant Superintendent,
R. A. HENRY, G. P. Agent.

NEW JERSEY RAILROAD—For PHILADELPHIA.

Via Kensington, *6.30 p. m.; on Sundays, via West Philadelphia.

Via Camden, 1 p. m. and 4 p. m.

Via West Philadelphia, 7 a. m., 8.40 a. m., 10 a. m., 12.30 p. m., 5 p. m., *9 p. m., 9.20 p. m., and 12 night.

For Baltimore and Washington—8.40 a. m., 12.30 p. m., *9.26 p. m.

For South and Southwest—8.40 a. m., and *9.20 p. m.

FOR THE WEST.

8.40 a. m., 12.30 p. m., 5 p. m., *9 p. m. and *9.20 p. m.

The 8.40 a. m., and *9 p. m. trains through, with but one change, to Cincinnati and Chicago.

Silver Palace Sleeping Cars attached to the 5 p. m. train run through to Cincinnati and Chicago without change, daily. (Saturdays and Sundays excepted); and on those days to the 9 p. m. train. This is the only line running through cars to Chicago by evening lines.

TICKET OFFICE FOOT OF CORTLANDT ST.

Tickets for sale in Reclining Chair cars can be obtained at foot of Courtland street and 944 Broadway.

May 10th, 1869. F. W. JACKSON.
*Daily. General Superintendent.

STEAMBOATS.

FOR BOSTON
VIA
FALL RIVER DIRECT.

The world-renowned steamers
BRISTOL AND PROVIDENCE,
Commander BRAYTON, Commander SIMMONS,
will leave (alternate days) DAILY
From Pier No. 30 North River,
foot of Chambers-st.,
AT FIVE P. M.
DODWORTH'S CELEBRATED ORCHESTRA.
GRAND PROMENADE CONCERT EVERY EVENING.
This is the only line running a
SUNDAY NIGHT BOAT.

To better accommodate the public the splendid steamers
NEWPORT AND OLD COLONY.
Commander LEWIS, Commander MILLER,
will leave (alternate days) DAILY
(Sundays excepted)
from Pier No. 28 North River,
(foot of Murray-st.,)
AT 6 P. M., FOR BOSTON VIA NEWPORT.
FREIGHT received at Pier No. 30 up to 5 P. M.
and at Pier No. 28 up to 6 P. M. each evening.
JAMES FISK, Jr., President.
M. R. SIMMONS, Managing Director,
CHAS. H. VAILE, General Passenger Agent,
H. H. MANGAM, Freight Agent.
Narragansett Steamship Company.

PEOPLE'S LINE FOR ALBANY.—THE largest and most magnificent river steamers in the world—The ST. JOHN. DREW and DEAN RICHMOND.

One of the above steamers will leave Pier No. 41. North River, EVERY AFTERNOON (Sundays excepted) at 6 o'clock, arriving at Albany in time to connect with railroad trains West and North. Returning, leave the Albany Steamboat Landing at 7 o'clock P. M., or on the arrival of connecting trains from the West and North. Through tickets can be obtained at the office on the wharf, and baggage checked to its destination. Freight received until the hour of departure.

TROY LINE FOR ALBANY AND TROY.

The fastest, elegant evening river steamboats in the world. The
VANDERBILT and CONNECTICUT
leaves Pier No. 44 North River, foot of Spring street,
EVERY EVENING,
Saturdays excepted, at 6 o'clock, and foot of West 34th street at 6:15. Fare only $1 50, being $1 75 less than rail and 75c. cheaper than any other route, and like reduction to Buffalo, Niagara Falls, all points West, to Saratoga, Sharon, Lake George, all points on Lake Champlain, to all points in Vermont and Western Massachusetts. Tickets sold and state-rooms secured at Dodd's Express Offices, Nos. 429 and 944 Broadway, New York, and No. 1 Court street, Brooklyn. Also at No. 308 West street, above Spring street. Passengers landed in Saratoga in time for breakfast.

STONINGTON LINE—TO BOSTON AND PROVIDENCE.

GREAT INSIDE ROUTE—SHORTEST AND MOST DIRECT.

Fare always as low as by any other line.

The new and elegant side-wheel steamers
STONINGTON and NARRAGANSETT.
Capt. WM. M. JONES. Capt. GEO. B. HULL.
From Pier No. 33, foot of Jay st., North River,
at 5 p. m.,
Arriving ahead of all other lines.
Tickets sold and state-rooms secured at No. 2 Astor House, and at Dodd's Express office, No. 944 Broadway.
D. S. BABCOCK.
President Stonington Steamboat Company.

ALBANY AND TROY DAY LINE.—CHANGE OF TIME.

The steamboats
C. VIBBARD and DANIEL DREW
will, on and after THURSDAY, July 8, leave Desbrosses street at 8, and 34th street at 8:15, landing at Yonkers, West Point, Cornwall, Newburg, Poughkeepsie, Tivoli, Rhinebeck, Catskill and Hudson. Tickets sold and baggage checked on board the boats to all points on New York Central and Rensselaer and Saratoga Railroads.

PUBLICATIONS.

THE MINES OF COLORADO:

BY CVANDO J. HOLLISTER.

LATE EDITOR AND PROPRIETOR OF "THE COLORADO MINING JOURNAL."

The approaching completion of two lines of railway between the Mississippi Valley and the Rocky Mountains, will mark an era in the history of the nearer of the mining Territories—Colorado. It will infuse new life into mining, by giving safe, quick, and reliable communication, reducing freights and risks, thus cheapening supplies and furnishing a most necessary competition in the labor market, under which the production of the precious metals will be largely increased, and the value and importance of property of all kinds will be proportionally enhanced. This cannot fail to arrest the attention of capitalists who are interested in Colorado gold and silver stocks, or are thinking of becoming so. It will be of yet more benefit to that large class whose capital is their muscle, because it will make accessible to them a new and large tract of virgin land, which, though far West, is still on the World's great highway, and therefore in no sense of the word in the backwoods. This region has a pleasant and healthy climate, and while its soil is unsurpassed in strength by that of the prairie States, it has a superior market in the adjoning mines. It most eloquently invites settlement and improvement. It will also give the Summer tourist a choice between the West and the East. It is not hazarding much to say that the Rocky Mountains offer the most delightful Summer resort of the New if not of the Old World. The climate is cool and bracing, the air deliciously pure and soft, the scenery both grand and beautiful, the forests full of game and the streams of trout, with hot mineral springs of high medicinal value boiling up at the root of every shade tree in the sequestered parks. The annexation of the Rocky Mountains to the Union by railways will open a new world to science, a new field of adventure to money and muscle, a new and pleasant place of Summer resort to people of leisure.

To meet the growing want of definite information concerning that interesting country, this book is put forth. It treats of the discovery of gold and settlement of the country, its geography, chorography, geology mineralogy, and agriculture, its early efforts at self government, and the progress and present condition of mining industry, including descriptive list of mining companies, principal improved mines, mills, machinery, and methods of treating ore—in short, it undertakes to give, as concisely and precisely as possible, and without any pretension, all that is known on the subject.

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"THE MANUFACTURER & BUILDER,"

ITS GREAT SUCCESS! WHY PEOPLE SUBSCRIBE TO IT!

REVIEW OF ITS CONTENTS OF THE PAST SIX MONTHS.

Show it to your Friends.

THE success which has attended our efforts to provide a first-class Monthly, devoted to the interests of the industrial classes, has far exceeded our most sanguine anticipations. THE MANUFACTURER AND BUILDER has been received with favor by every class of the community. Manufacturers have taken it for the information which it gives in regard to the improved processes in which they are interested; mechanics have taken it for the instruction which it conveys in regard to matters pertaining to special arts and trades; professional and literary men have taken it for the information which it conveys in regard to the progress of the industrial arts; people, in general, have taken it because it contains much pleasant reading matter for the family circle. That all these classes have been right in their estimate of this journal, will be evident to any one who will read the Table of Contents which we here append. When we state that these articles are almost all derived from original and authoritative sources, it will be seen that we have presented a body of **PRACTICAL, THOROUGH, AND RELIABLE INFORMATION,** such as can nowhere else be obtained for the sum charged for a year's subscription to THE MANUFACTURER AND BUILDER.

Subscription $1.50 per Annum, with Liberal Club Rates and Premiums.

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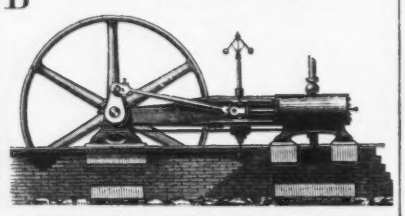

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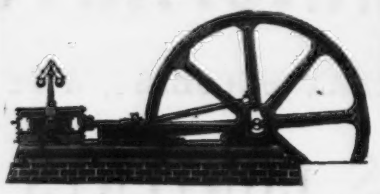

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